

INTERNATIONAL AGRIBUSINESS AND THE SMALL FARMER:
CANTALOUPE, COMPETITION, AND CACIQUES
IN MICHOACAN, MEXICO

by

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by

Marion Lois Stanford

The dissertation is dedicated

a los productores de melón
del Valle de Apatzingán, Michoacán,
a los que siembran, trabajan
y perseveran

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By

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Major Department: Anthropology

A major commercial agricultural region in western Mexico, the valley of Apatzingán produces 40-50% of fresh cantaloupe exported to the United States. This case study examines the complex relationship between international market expansion, local agricultural economies, and peasant producers, and how these factors led to the current technical and economic crisis. In Apatzingán, authorities assign great responsibility to local competition among producer organizations and internal conflicts.

Initially, the study examines the social and political organization of an international agribusiness system, focusing specifically on the agricultural history, production technology, social organization of the commodity system, producers' organizations, and history of local level

struggle for control over critical resources and benefits. Next, the study analyzes the impact of local organization and resistance to the agribusiness system at two levels: (1) competition between local producer organizations and (2) resistance by local producers to their own organizations. Statistical analysis assesses the impact of competition between older producer associations and newer groups. The data support the hypothesis that newer groups, composed of larger producers, compete more effectively with older associations, composed of land reform beneficiaries, or ejidatarios. New groups gain by ignoring regional norms and because small farmers, of the older associations, desert their own organizations and deliver cantaloupe to the newer groups' packing houses. Facing increased costs, insecure market conditions, and loss of confidence in their own associations, small farmers risk future losses in order to secure immediate income. The impact on the local economy is devastating.

In the international market, Apatzingán producers face a monopsony market, with limited export market opportunities. Historical data on U.S. imports, local production, prices, and production costs over 20 years demonstrate that external factors better explain deteriorating local market conditions, specifically limited demand, relatively constant prices, and increasing production costs. In summary, this study examines the

process of economic dependency, looking at both the linkages between international and local systems and the local level mechanisms which have shaped the export agricultural economy of Apatzingán, Michoacán.

CHAPTER ONE
INTRODUCTION

Introduction

I just want to say one thing. In the world, there's no region like Apatzingán. They don't have the climate that we have. They don't have the soils we do. And here we are still with melon after twenty years, despite all the fighting. We tried to change the system, but it's the tradition here. The chaos¹ is our tradition in Apatzingán.

(Ex-President, Regional Union)

They, the directors, left us to fail.

(Cantaloupe Producer)

The valley of Apatzingán, situated in southwestern Mexico, has experienced a complex agricultural and political history. After the Mexican revolution, the government redistributed large areas of rich agricultural land to small producers and invested heavily in infrastructural development through irrigation, agricultural credit, and road construction. A major commercial agricultural region in western Mexico, the valley, since the mid-1950s, has

¹. The term used in Spanish, desmadre, is a Mexican slang term, literally meaning "without a mother." It is used to describe situations of complete chaos, even worse than disorder, where there is absolutely no control or order.

produced 40-50% of all fresh cantaloupe exported by Mexico to the United States during the winter months. In Apatzingán, smallholders represent a major political and economic force in the regional commercial agricultural economy. Eighty percent of irrigated land is in the ejido² sector, and ejidatarios, small producers holding communal land rights, have actively participated in commercial agriculture.

Currently, cantaloupe is the major export crop in the valley, generating income and employment for both producers and agricultural workers. An estimated 2000 producers are organized into various associative forms to produce cantaloupe for export to the United States (BANRURAL 1987b:17). Broader estimates are that 5000 local residents depend on cantaloupe in related activities as their principal income source during the year. In the past ten years, cantaloupe, although occupying less than 20% of the total agricultural area in the region, has generated 55% of the agricultural value of commercial crops harvested during the winter season in the region (BANRURAL 1987b:18).

². The ejido is the land reform institution through which the government redistributed land to peasant communities after the Mexican Revolution. The Mexican government retains the actual land title and grants lifetime use rights to the ejidatarios, members of the peasant community. As a rule, important Spanish terms are first defined and then used in throughout the text. A glossary following the text explains both Spanish terms and major regional agencies.



Figure 1.1. Map of Mexico.

Source: Mares 1987:xx.

The region received extensive government and foreign investment, with the objective that commercial agriculture would offer economic opportunities to the local population.

Yet, Apatzingán has been both testimony and victim to the programmed experiences of the State in agricultural matters. Here, the producers accepted modern technology to change from their original cultivation of traditional crops . . . to more profitable crops for export. But from commercialization, everything has balanced out the same as before, from cotton as well as from melon.

(Sánchez Perez 1986:12)

Despite the expansion of commercial agriculture, the case of Apatzingán suggests a more complex relationship between commercial market expansion and local systems. In Apatzingán, production and commercialization have decentralized over time, smallholders have dominated horticultural crop production, and the Mexican state and private agencies have repeatedly intervened both to limit cantaloupe production and to grant smallholders access to production. Over time, Apatzingán has earned a reputation among U.S. buyers and state officials as problematical, in that local elite and producers do not adhere to imposed production and commercialization regulations, and local producers do not always abide by established contracts.

Purpose of the Study

The study's objectives are threefold. First, the study examines the organization of this agribusiness system, in order to explain how and why it differs from other export

commodity systems previously studied (see Paige 1975). The focus is on the organization of the system and, particularly, on the social and political mechanisms by which an economic system controls small producers' access to resources and benefits from export cropping. Among sociologicsts, anthropologists, and political scientists who study commodity systems, this approach constitutes an analysis of the social and political organization of an economic system. Along this line, it parallels institutional economics, in economic theory. Institutional economics proposes a methodology which: (1) analyzes the way an economic system functions, (2) explains why it operates and behaves as it does, (3) predicts how the system will perform, and (4) evaluates the performance of the economy (see also Bain 1968 and Labys 1980).

Second, this study also addresses local behavior, that is, local level response and resistance to the constraints imposed by a foreign agribusiness system. In Apatzingán, individual strategies and resistance, although occurring within the structure of a formal organization, often conflict with and subvert the organization's avowed collective objectives in the interests of individual economic survival. This calls for closer examination . . .

. . . of everyday forms of peasant resistance, . . .
 . the ordinary weapons of relatively powerless groups: foot dragging, dissimulation, desertion, false compliance, pilfering, feigned ignorance, slander, arson, sabotage, and so on. These . . .
 forms of class struggle have certain features in

common. They require little or no coordination of planning; they make use of implicit understandings and informal networks; they often represent a form of individual self-help; they typically avoid any direct, symbolic confrontation with authority. To understand these commonplace forms of resistance is to understand much of what the peasantry has historically done to defend its interests against both conservative and progressive orders.

(Scott 1985:xvi)

Local resistance, at two levels, has shaped the regional development of commercial agriculture: (1) resistance from local level producer organizations, and (2) resistance from local producers. The distinction between these two levels is critical. Thus, as part of examining local level response, this study also assesses the impact of these two sets of behavior on the export crop system itself and on regional development in general.

In the case of Apatzingán, over time, a wide range of technical, economic, social, and political factors have resulted in a crisis in cantaloupe production and commercialization. The third objective is to explain this current crisis in commercial cantaloupe production in Apatzingán. Local and regional authorities attribute part of the responsibility for the crisis to increasing competition and conflict among the local producer organizations and within the organizations themselves. Others contend that conflicts between local producers and organizations, on the one hand, and the U.S. distributors, have led the buyers to now threaten to leave the region.

Another possible explanation is that cantaloupe costs of production have increased dramatically, reflecting the crop's technical requirements. The producers cannot earn the income they once earned from the crop, and local residents are concerned that the valley will lose the crop completely.

Q: What are your plans, don Antonio? Will you plant next season?

A: If they give me credit. At best, I'm going to plant melon. But, generally, to put in my own capital, I can't do it anymore. There are too many risks. If I had planted sorghum, I would have earned more. . .

I didn't earn even a single cent this season. The commercialization, the buyers manage it all for themselves. The prices haven't changed. . . We producers are at their mercy. If I want to have an adventure, I plant ten hectares. For the producer, it is a lot of money, and no security. To plant cantaloupe is to play cards.

(Cantaloupe Producer)

Explaining this crisis requires analysis of the complex relationship between capitalist agriculture, the state, local level organization, and the individual producer, the ejidatario. The following section presents a theoretical review, focusing on the peasant economy and petty commodity production. This recent micro-level work provides useful theoretical tools while still placing local economies within the context of a capitalist market system.

The research problem is to understand causal conditions that are conducive to the cantaloupe producer crisis. To

accomplish this task requires an explanation of causality in the system and the impact of local behavior on economic performance. The theoretical concerns, and research problem specification, thus influence (1) the level of analysis, the commodity system, and (2) the theoretical model employed, the integration of the production unit, or ejidatario, into the capitalist economy. In short, this study attempts to analyze the linkages between macro-level processes, as expressed in the expansion of commercial agriculture, and local-level processes, as expressed in local organizational behavior, competition among local organizations or agricultural firms, and individual producer strategies.

Overview of the Study

In presenting the material, each chapter examines the organization of a specific system and its impact on small producers. The chapters explain the critical factors which led to current problems in production and commercialization.

After the theoretical framework, presented in Chapter Two, Chapter Three, on agrarian history and development, examines the historical development of the valley of Apatzingán. Several factors are critical in the later development of producer organizations in export agriculture. Historically, the region remained physically, politically, and economically isolated from national development until the Mexican government's intervention through the River Basin Development Programs of the 1940-60s. During the

major land reform programs of Lázaro Cárdenas' regime (1934-1940), Nueva Italia, the second largest collective ejido in Mexico was selected as an example of Cárdenas' success in integrating the ejidatario into viable commercial agricultural enterprises. This, among other cases, represents a history of failed "collective" experiments in the valley of Apatzingán, in which the government imposed bureaucratic, hierarchical administrative structures in attempts to organize groups of specialized producers.

Chapter Four provides an overview of the commercial agricultural system. The discussion of major regional commercial crops examines constraints limiting small producer participation. Chapter Five focuses on the technical aspects of cantaloupe production and commercialization. Production requires great capital investment, technical expertise, and constant and skilled hand labor. Facing these constraints, particularly high costs of production, producers make certain management decisions. These decisions, according to local agricultural technicians, create the technical problems which reduce the crop's viability in the region.

Chapter Six examines the social organization of the cantaloupe agribusiness commodity system. The export-oriented monopsony market structure impacts on the relations between participants in the economic system. State and private agencies intervened to artificially maintain higher

prices by limiting production and export. As a result, producer groups and producers compete for limited hectareage and permits. The commodity system provides the methodological framework examining the non-economic mechanisms used by the U.S. buyers, Mexican government, and regional and national private agencies to influence price and supply. The chapter examines the ultimate impact on the producer and the producer's lack of control over the system.

Chapter Seven discusses the history, structure, legal status and function of different types of local cantaloupe producer groups: Local Agricultural Associations (AALs), Ejido Unions (UEs), Cooperative Societies (SCs), Societies of Social Solidarity (SSSs), and Work Groups (Grupos). Political conflicts and competition among the producers' organizations undermine the state's and regional union's ability to regulate production and commercialization. Local officials contend this conflict is a major factor in the deterioration this agribusiness system.

Chapter Eight examines the historical stages in local and external competition for control over critical resources. Specific historic stages in cantaloupe production and commercialization are evident in Apatzingán, reflecting shifts in local level control over credit, planting and export permits, and the producer associations. In the valley of Apatzingán, history marks the growth of new groups, state and local attempts to control overproduction,

poor experiences with U.S. buyers, unsuccessful attempts to export fruit directly to the U.S. market, state intervention in overriding decisions of the Regional Union, internal political conflicts in the producer organizations, and increasing competition from other Mexican regions. Ultimately, the proliferation of producer organizations reduces the local intermediaries's ability to control production, critical to negotiating with U.S. buyers.

Chapter Nine examines the current crisis in production and commercialization in the valley of Apatzingán. Based on quantitative data collected from all the producer groups in the region during the 1987/88 season, the section examines statistical differences in production, yields, volume packed, and other variables, between the older, established producer associations and the newer groups. The purpose is determine whether differences in operations, such as overproduction and pirating of fruit by the newer groups, as contended by many producers and local officials, contributed to a decline in price during the 1987/88 season. This chapter attempts to quantitatively measure the regional economic impact of the local organizational problems discussed in previous chapters on production and commercialization. This analysis stands as an exercise, given the data's lack of time depth and high degree of variation within the variables. The data shows statistically significant differences between older and

newer groups, suggesting differences in pirating and overproduction. Beyond this, analysis should also assess the impact of these differences.

Over time, from 1970-1988, local behavior does not appear to impact significantly on prices received by local producers. Cantaloupe producers in Apatzingán face a monopsony market, in which there are relatively few buyers and a limited export market. Examining the historical data suggests that there is a limited demand, relatively constant prices, thus, decreasing, in real terms, and increasing costs of production. Cantaloupe, the major export crop in this region, now costs as much or more to produce as the income it generates for the producer. These data are statistically inconclusive for several reasons: (1) the data are based on annual summaries, (2) the inadequate specification and measurement of other factors, such as time lag, infrastructural support, and others, and (3) the inadequacy of available historical price and cost figures.

Chapter Ten presents general conclusions and policy recommendations. Local conflict and competition undermine the operations of Mexican government agencies and U.S. buyers, to the point that most buyers would prefer to work in other regions where they do not have to deal with large organizations of small producers. Furthermore, given the limited market and increased competition from other Mexican states, local competition among all groups over a single

crop prevents development of broader solutions to regional economic problems.

The solution lies not in one crop, cantaloupe, a fresh fruit luxury export, highly perishable and with limited consumer demand. Developing the commercial agricultural economy of the valley of Apatzingán requires a structural reorganization of the production and commercialization sectors: (1) diversification of the agricultural economy, to reduce the economic dependency on one crop, (2) establishment of new markets, to reduce the local vulnerability to changes in the U.S. market, (3) establishment of new direct ties with regional markets in Mexico, to allow local producers to directly market fruit not meeting export standards, (4) search for national sources of financing, both public and private sector, to reduce the control of the U.S. distributor companies, (5) the restructuring of local distribution of credit, inputs, and planting and export permits, to prevent the channeling of all critical resources through local intermediaries, (6) the strict enforcement by state agencies of locally agreed upon norms and regulations, and, particularly, regional and national level support for local authorities who enforce regulations, and (7) an open book policy on all financial accounts and operations within producer groups, whereby the regional union supports the producer's right to inspect the financial operations of each respective organization. The

conclusion ventures these recommendations with a completely idealistic naivete, recognizing full well the complex social and political interests which will prevent them from ever being carried out, and also addressing these specific issues in this summary section.

The policy recommendations are not new or secret; many reflect the careful deliberation of those in Apatzingán with years of experience working within this system. They themselves recognize the complexity and conflicts of interests, but must deal with these problems on a daily basis. I recognize the sensitive nature of a study of local level organizations. In presenting the material, this study does not intend to blame one local group over another. Rather, the purpose is to examine the structure, the organization of the system, integrating the insights and opinions of local participants. The objective is to better understand the process of economic dependency, specifically the local level mechanisms which have shaped the decentralization of this export crop system. These issues are not only interesting theoretically; they are also critical in understanding the constraints faced by organizations of small producers entering into commercial agricultural production and marketing.

CHAPTER TWO

THEORETICAL REVIEW:

CAPITALISM, PEASANT ECONOMY, AND APATZINGAN PRODUCERS

Introduction

Explaining the crisis in cantaloupe production requires analysis of the complex relationship between the crop's technical requirements, as well as the social, political, and economic aspects of capitalist agriculture, the state, local level organization, and the ejidatario. To accomplish this, Chapter Two presents a theoretical review of three previously disjoint literatures, focusing on (1) dependency theories of development, (2) the peasant economy and petty commodity production, and (3) the commodity systems approach. Drawing from these three research fields, this study relates the case of Apatzingán to other regions experiencing dependency. The study analyzes the macro-level conditions leading individual producers to be subsumed or integrated into the capitalist market system. The commodity systems approach provides a clear, definite framework for analyzing the process of economic dependency.

This chapter initially presents a general overview of development theories, including: (1) general theories of

economic and agricultural development, (2) the role of the state, (3) moral economy and peasant society, and (4) the major focus on recent micro-level theories of the peasant economy in capitalist economic systems, particularly work on peasant commodity production. These recent theoretical concerns reflect many scholars' dissatisfaction with both broader dependency and Marxist theories on the impact of capitalist agricultural development on local peasant economies. Drawing from these discussions, this chapter then presents a theoretical model of integration of the peasantry into the capitalist economy. Thus, the case of Apatzingán producers is theoretically placed within its economic context. This leads to examination of the impact of economic conditions on ejidatario political strategies and resistance, drawing on theoretical discussions of the role of the state and the moral economy of the peasant. The next section presents an overview of the discussion, incorporating the relevant theoretical sections.

Economic and Agricultural Development

Dependency

Latin American scholars advanced the notion of dependency in reaction to primarily North American theories of modernization and socio-economic development, which argued that development in Latin America, Africa, and Asia could follow the patterns established by earlier development in Europe and the United States (see Black, ed. 1976;

Johnston and Kilby 1975; and Rostow 1960). In contrast, Latin American sociologists, economists, and historians contended that capitalist development in the Third World would not necessarily mirror the European transformation. Instead, they argued that the already-developed capitalist system structured Latin American, and other areas' development to suit its own need, restricting agricultural and industrial development to provide primary goods needed by the industrialized countries (Cardoso 1972; Cardoso and Faletto 1973; Chilcote and Edelstein, eds. 1974; Cockcroft, Frank, and Johnson, eds. 1972; Frank 1967; and Prebisch 1950).

Dependency theory focuses on Latin American countries' dependency on international markets and the industrialized countries and the consequence of this dependency for national development. Dependency may occur through a range of relationships, from foreign ownership of the most productive sectors to dependence on foreign markets for nationally produced goods. The economies in these countries are "disarticulated" (see de Janvry 1981). That is, sectors in peripheral countries do not exchange labor, technology, goods, capital, or information, as do the manufacturing agricultural sectors in "articulated" societies or industrialized nations. Peripheral economies and societies remain dependent on the industrialized countries for

technological development, capital investment, and markets for primary goods.

In general, dependency theorists emphasize the impact of European and U.S. political and commercial expansion, attributing most of Latin America's development problems to external factors. Other work within the dependency framework addresses national-level theoretical issues, such as internal colonialism (Cotler 1970), the role of national commercial and political elite (Bourricaud 1966), and the role of the state in advancing more specific theories about the dependency process within the developing country. Dependency issues continue to be a major theoretical concern in research on Latin American agricultural development.

In agricultural development, de Janvry contends that the agricultural sector is similarly characterized by "disarticulated accumulation," in which uneven capitalist development generally leads to a differentiation between commercial farms and the rural poor. The cause of this structural crisis lies in the "global process of capitalist accumulation" (de Janvry 1981:3). State reformist attempts, such as land reform, community development, and technological diffusion, thus face severe constraints and a limited capacity to resolve contradictions inherent in capitalist accumulation and class relationships. This is because state policy reflects: (1) class structure and balance of political forces in state social control, and (2)

the objective and subjective contradictions of capitalism and the consequent crises of accumulation and legitimacy (de Janvry 1981:186). Working within a dependency framework, other social scientists have focused specifically on the agricultural sector and the impact of capitalist development on the rural poor.

Capitalist Agricultural Development

Social science studies of export agricultural systems report increasing land and wealth concentration over time, the development of conflictual relationships between labor and management, and the increasing complexity of production and processing technology (Paige 1975; Rama and Vigorito 1979; Sanderson 1986; and Williams 1986). These studies examine the transformation of agricultural systems in response to foreign capital investment and international market demand.

In examining export agricultural systems, some social scientists specifically examine rural social class relations and the impact of export agricultural systems (Barry 1987; Nolasco 1985; Paige 1975; Williams 1986; and Wolf 1969). They point to export agriculture itself as the major factor in restructuring the organization of rural production, forcing smallholders out of production and into the agricultural wage labor force (Burbach and Flynn 1980). In a comparative study of export agriculture and political movements, Paige schematizes relations between "non-

cultivators" and "cultivators," based on differential control over land and capital. In rural systems, where sharecropping or migratory labor predominate, and where local commercial elite retain control over land, Paige hypothesizes a real potential for class solidarity, strong political organizations, and social revolution by agricultural workers. In contrast, in commodity agricultural systems, such as Apatzingán, the local elite as middlemen or economic brokers, draw their income from commercial capital, not from land. Larger profits provide local brokers with "greater flexibility, wealth and negotiating ability" (Paige 1975:48), where reforms can redistribute some income and dissipate resistance. Small producers do not form class-based organizations, remaining divided by "economic competition, internal wealth stratification and structural isolation (1975:46). Paige's study contributes in its analysis of a specific export systems, developing better theory about the relationship between commercial agriculture and local socio-economic groups.

Viewed from this perspective, an influx of foreign capital and dependence on foreign export markets result in an "internationalization" of the agricultural system, whereby foreign private interests and consumer demands dominate regional and national development needs (Arroyo,

Rama, and Rello, eds. 1985; Barkin 1985; Rama 1985; Sanderson 1981b; 1981c; 1983; and 1985).

Internationalization of Mexican Agriculture

In Mexican agriculture, this process, indicated by the growth of agricultural industrialization and increasing complexity in the agricultural sector, produces specific results: (1) loss of regional and national autonomy in agricultural development decisions, (2) loss of national food self-sufficiency, and (3) greater hardships for rural producers (Arroyo 1979; Barkin 1982 and 1985; Rama and Rello 1980).

The expansion of capitalism in national economies produced a fundamental change in inter-sectoral relations, transforming agriculture from a sector which determines what happens in national industry to one which depends on the demands of the industrial sector.

(Barkin and Suárez 1982:29)

These studies focus on who has control over production, processing, and marketing of export crops. This is a critical issues in Latin America, where foreign capital controls much of the export crop sector. The authors emphasize the increased expansion of international capital into commercial agriculture. The foreign-dominated sector relies more on capital-intensive production technology, wage labor, and chemical inputs. The commercial enterprises are dominated by foreign ownership, financing, or contractual production, marketing and processing arrangements which

limit local control. Finally, these enterprises exclusively produce commodities for exchange and profit; they have no ties nor responsibility to the local production unit (Barkin 1985).

Social scientists also contend that international commercial agriculture negatively impacts certain sectors of the Mexican peasantry: (1) the poorest peasants, producing maize and beans in rainfed regions, increasingly marginalized from national agricultural development (Montañez and Warman 1985) and (2) rural producers producing export crops in irrigated areas for agricultural industries, more dependent on financial credit, state support, marketing intermediaries, and international agricultural trade (CEPAL 1986; and Rama 1985).

Ultimately, scholars contend that this process leads to an international division of labor, in which Latin American countries, such as Mexico, produce agricultural commodities requiring cheap labor in exchange for the developed countries' grain crops (Sanderson 1983 and 1986). In Mexico, new highly competitive sectors have emerged: livestock, such as beef and pork, and fresh fruit and vegetables. The shift has consequences in two realms. First, increased foreign domination has national impact resulting in: (1) a weakening of state autonomy, (2) an increased external dependence, (3) foreign agribusiness domination of national agricultural policy, and (4) removal

of food policy from the public realm (Sanderson 1986:11). Second, emphasis on commercial agriculture displaces domestic food production, reflecting a lack of concern about production and the nutritive needs of the rural poor (Sanderson 1986:277).

Food Self-sufficiency

In the past 20 years, Mexico moved from a net exporter of basic grains to a net importer, losing national self-sufficiency in basic foods. Many scholars hold commercial agricultural development responsible for this loss (Arroyo, Rama, and Rello 1985; Barkin and Suárez 1979, 1982, and 1983; Calva 1988; Montañez and Aburto 1979; and Rello 1985). These issues are also addressed in social science research in other Latin American countries (Arroyo, Rama, and Rello 1985), but Mexican social scientists debate the issue most vocally and have impacted on policy.

According to these scholars, capitalist expansion in Mexican agriculture (discussed above) critically exacerbated the current food crisis (Barkin and Suarez 1982). Of Mexico's arable crop land, 20% is allotted to export crop production. As commercial farmers shifted out of food crop production and into more lucrative crops, total area in maize, Mexico's major food crop, dropped from 50 to 40% of arable crop land (Barkin and Suarez 1982:58). Food production was relegated to non-capitalist production, relying on traditional technology and lacking credit access,

fertilizer, or new seeds. These small farmers, primarily ejidatarios, on marginal lands, produce low yields and could not sustain Mexico's national food needs (Montañez and Warman 1985; and Warman and Montañez 1982). Here, capital expansion increases regional income disparities and exacerbates the current national food deficit.

National and regional level studies encounter problems in rigidly applying a dependency framework. Dependency theorists begin with the "logic of capitalist accumulation in the periphery," downplaying the capacity of either state or local level groups to assume autonomous ideological positions or behavior. State policy, state elites, local commercial elites, and local producers are relegated to carrying out the development process determined by external forces. Other scholars, while recognizing the constraints imposed by external forces, document how state elites can develop and pursue specific policies for agricultural and rural development, which may not coincide with the objectives of foreign commercial elites (see Grindle 1986).

Role of the State

Theoretical interest in the role of the state in capitalist development arose from many scholars' dissatisfaction with broader theories of dependency and capitalist expansion. These theories are characterized as "society-centered," in which the state, or government was seen as . . .

an arena within which economic interest groups or normative social movements contended or allied with one another to shape the making of public policy decisions . . . at the theoretical level, virtually all neo-Marxist writers on the state have retained deeply embedded society-centered assumptions, not allowing themselves to doubt that, at base, states are inherently shaped by classes or class struggles and function to preserve and expand modes of production. Many possible forms of autonomous state action are thus ruled out by definitional fiat.

(Skocpol 1986:5)

In summary, variations in state structures, behavior, or policy across different nations or time periods cannot be explained except in terms of some "logic" of the capitalist system. Parallel to criticisms levelled by micro-level researchers, these approaches have been criticized for failing to allow that the government itself may be an independent actor. Comparative analysis of Mexico, Brazil, and Colombia documents historical variations in state policy and the subsequent impact on rural development among the three countries (Grindle 1986). Explaining how and why these states formulate and pursue their own agendas requires analysis of specific features: (1) extranational orientation of the state, (2) capacity and/or need to maintain domestic order, and (3) organizational resources that state officials may mobilize (Skocpol 1986:9). In Latin American research, there are three critical theoretical concerns: (1) transnational linkages, (2) state policy, and (3) state intervention.

Transnational Linkages

Under both dependency and capitalist world systems perspectives, integration into international markets inevitably reduces the state's prominence and independence as an economic actor. In contrast, other studies have contended that . . .

an intensification of transnational economic ties tends to be associated with an expansion of the state's role in a range of developing countries.

(Evans 1986:193)

As an example, Krasner's study of the Brazilian coffee trade documents the reliance of local agrarian elites on state support to regulate prices and stabilize the international market. Brazil's ability to establish the international coffee agreements depended on the tolerance of U.S. policy and the North American consumer; still, for Brazilian coffee producers, state intervention enabled them to increase export earning and diminish price fluctuations (Krasner 1973). Others, such as Mares' study of large commercial horticultural producers in Sinaloa, Mexico, document the producers' ability to establish alliances with private financial sources in Nogales, Arizona, later mobilized to support Mexican export production and to influence U.S. import policy (Mares 1987).

State Policy

In most cases, social science research has documented policy's detrimental impact on more equitable, balanced

national development and on the poorest rural producers. As discussed above, Mexican social science research on food production has cited state pricing policy for grain crops as a primary factor in Mexico's loss in food self-sufficiency (Barkin and Suárez 1985).

Based on these studies, Mexican scholars actively recommended policy changes to increase domestic production of food crops and reduce dependence on imports. Recommendations include import restrictions, increased government prices for food crops, and government capital investment in food production through credit, infrastructural development, chemical inputs, and market development (Luiselli Fernandes 1984). From 1980-82, under the SAM program, the Sistema Alimentario Mexicano, the Mexican government financially committed itself to regain food self-sufficiency by 1985. The program proposed to reshift national priorities from commercial export production to basic food crops through three immediate programs: (1) increase in guaranteed price for maize and beans, (2) increased credit for food staple producers, and (3) government subsidies for chemical inputs and improved seeds for food crop producers (Spalding 1984:17). The Mexican government targeted the traditional peasant economy, not the productive agribusiness sector, as the means to regain national food self-sufficiency.

Government spending and shifts in resource allocation temporarily impacted food production at the national level. The amount of land in maize expanded from 5.6 million hectares in 1979 to 8.2 million hectares in 1982, and total maize output increased by 75% (Spalding 1984:20). Yet, in 1982, facing increased foreign debt problems and depressed oil prices, the Mexican government dismantled most of the SAM programs, increasing its reliance on imported grain crops from the United States. In Mexican social science, food self-sufficiency continues to be a political issue, but national food policy has shifted (Barkin and Suárez 1985).

Despite the demise of SAM, shifts in Mexican food policy over time indicate the state's capacity to set an independent agenda, within the constraints of external market conditions and its own resources. Here, in much of Mexican social science research, there exists a contradiction between theory and policy recommendations. At the same time analyzing ties between the state and international interests, many policy researchers recommend the state's increased intervention, through policy, infrastructural development, and capital investment, to guarantee a type of agricultural development directed towards a more equitable distribution of benefits.

State Intervention

Other studies demonstrate that state intervention during specific time periods profoundly impacts on the

course of national development. Mexico, particularly, stands as a case in point. From 1934-1940, Lázaro Cárdenas initiated the broadest land redistribution in the history of Mexico. By 1940, ejidos held 40% of total cultivable land, comprising 811,157 recipients (Hansen 1971:34). Here, the Mexican government purposefully tried to politically restructure rural Mexico, to break the rural elite, more equitably distribute land, and form a political alliance between the state, peasants, and urban workers. The government provided credit, technical assistance, and infrastructural support to the ejido sector. Land redistribution concentrated in the northwest and west, in the state of Michoacán.

In the case of Apatzingán, these three factors (state-transnational linkages, state policy, and state intervention) critically shaped regional development, as will be discussed in upcoming chapters. In fact, state financial and organizational support established the original producer associations in the valley of Apatzingán (see Chapter Seven). The Mexican government, during limited time periods, critically supported local level efforts to confront, or "resist," foreign buyers.

Peasant Society and Moral Economy

Peasant Society

Earlier anthropological work has examined the heterogenous social and economic relations within the

peasant community. The theoretical concerns addressed in these studies help explain local social and economic relations in Apatzingán. Here, the work on anthropological concepts of patron-client, brokers, and alliances is particularly useful.

Residents of the valley of Apatzingán operate within a stratified social system of consciously manipulated patron-client relations. They construct social and economic relationships through a network of informal and temporal alliances, drawing partly on earlier anthropological theoretical models of patron-client relations (Foster 1967a and 1967b). Ties are informal, personal, and based on resource exchange between both participants of different social status. A system of vertical alliances arises in situations such as Apatzingán where formal structures do not effectively regulate resource distribution and where resources are limited. Vertical alliances then become the only means of insuring a steady and regular resource flow.

Generally, a patron, or member of the local commercial elite, emerges as an economic broker within the export commodity system, controlling access to critical resources, inputs, and legal permits needed to enter into export crop production (see Wolf 1966a and 1966b). According to theory, the local intermediary maintains his position only as long as he both continues the resource flow to his clients and maintains control over distribution of the limited resources

among competing clients. In Apatzingán, cantaloupe production constitutes a "limited good," as the Regional and National Unions actually restrict local production.

Anthropologists, particularly George Foster, inferred a certain kind of social relations, responding to limited economic conditions, which was characterized by social disharmony, mistrust, suspicion, and lack of cooperation (Foster 1967). G. Foster interpreted these relations as individual networks, based solely on dyadic contracts.

Each person was the center of his private and unique network of contractual ties, a network whose overlap with other networks had little or no functional significance.

(Foster 1967b:215)

Foster's emphasis on the individual nature of ties implied that cooperation or alliances among even small groups was impossible. By overstating the individual nature of relations, Foster ignored the potential for group alliances among the peasantry, be it either horizontal or vertical.

In Apatzingán, horizontal alliances are also based on informal exchange networks and thus are personal, temporal, and often kin-based. Among local brokers, alliances shift constantly as intermediaries make and break deals with each other and with outside agents. Among producers, alliances are usually based on communal kin ties, that is related producers from the same community or ejido, irrespective of membership in a particular producer organization. Still,

the individual producer considers the strengths and opportunities available through both vertical and horizontal sets of alliances.

Horizontal ties and thus the potential for shared class ideology and organization are obstructed because vertical ties with local brokers have generally been those which can insure the most reliable access to critical resources (such as planting permits and credit) needed to produce cantaloupe. The producer, faced with the economic reality of daily life, works within the existing system and with his patrons, because those ties guarantee his continued access to commercial production. Explanation of the persistence of social tension, local competition, use of patron-client relations lies in the structural constraints to cooperative activity and trust among Apatzingán producers (see also Wolf 1969).

Moral Economy and Passive Resistance

Anthropological work on the peasantry has often stressed the importance of culturally-determined values in shaping individual values and behavior. Peasant society is characterized by reciprocity, in which social norms of sharing and redistribution may act as a levelling device, counteracting socio-economic differentiation and ensuring the survival of all community members. When these cultural features predominate over individual objectives, social scientists have characterized peasant society and economy as

retaining its own "moral economy" (Scott 1976) or "economy of affection" (Hyden 1980). This perspective implies a different peasant economic logic than that characterized by a capitalist economic system.

Within this framework, the integration of a peasant society by the capitalist economic system results in a fundamental transformation of both the local economy and societal values. For this reason, Scott argues that peasant revolts and resistance in Southeast Asia during the 19th-20th centuries were violent reactions against the loss of traditional autonomy and peasant society's integration into an international economic system (Scott 1976). Other scholars contend that this view romanticizes the pre-capitalist conditions of traditional peasant society, arguing that peasants as individual economic actors actively seek new opportunities which capitalist markets offer them (Popkin 1979). Thus, peasant revolts actually are attempts by traditional elites to retain social and economic control over their constituency.

Between these two extremes lies a wide range of unstudied peasant behavior. Two theoretical concerns are important in the current study of Apatzingán: (1) the notion of consciousness, and (2) passive resistance. Recognizing that peasant revolts are few and far between, several social scientists now examine the more common experience of peasant exploitation and suppression, in order to explain how

peasants respond to situations in which they may not openly revolt (Scott 1985).

The notion of consciousness reflects J. Scott's discussion of hegemony¹ and consciousness (J. Scott 1985:304-350). Based on data from Malaysian peasants, Scott argues that: (1) subordinate classes readily "penetrate," or see through, the prevailing dominant ideology, (2) peasants recognize the inevitability of their situation but do not accept it as just, or legitimate, and (3) they react most strongly when dominant classes fail to deliver the support or resources expressed by the dominant ideology.

In Apatzingán, producers see their position for what it is. They are not overly respectful, acquiescent, or loyal to their patrons. Apatzingán producers at the bottom of this cantaloupe hierarchy have long held a reputation for being politically active, vocal, and aguzado². Many producers are fully aware of the specific ways that local

¹. The concept of hegemony, as first elaborated by Antoni Gramsci, is a process of ideological domination. Here, Gramsci argued that dominant classes controlled both economic means of production and ideological expression, or the "symbolic means of production." Beyond this base, many Marxists argued for the existence of "false consciousness," in which the dominated accept not only the reality of their existence, but its legitimacy as well.

². Aguzado comes from the Spanish verb, aguzar, to whet, or to sharpen a knife with a whetstone. In Apatzingán, locals use the term as a compliment. A person who is aguzado is sharp, someone who will not be taken advantage of by others.

and foreign intermediaries take advantage of them; they accept the situation because they have to, but if conditions change, producers will quickly exploit other potential alliances. In summary, their allegiance to local patrons is conscious, temporal, and based on economic interests. Yet they remain constrained by the reality of their economic conditions. It is tactically strategic for them to work within the existing social order. Although it is generally economic suicide for producers to collectively confront their patrons, at the individual level, many cautiously sabotage the system in a number of ways.

In summary, several points from community level research are critical this case; these will be examined more closely throughout the following chapters. First, in Apatzingán, local alliances and competition occur at two levels: at the organizational level, where local groups compete to defend their interests against external forces, and at the producer level, where the producer defends his interests against the organization. Second, the broker, or local commercial elite, plays a critical role in this commodity system, controlling resources required to produce cantaloupe. To justify his position, the broker must both insure the continued resource flow and maintain control over the distribution of those limited resources.

Third, both producer and broker gain access to resources by informal, personal, and temporal ties, through

vertical and horizontal alliances. The earlier work provides the basis for the contradiction expressed by J. Scott. Apatzingán brokers, local and foreign, gain by exploiting the economic opportunities of an international fresh fruit and vegetable market, at the same time that they maintain local producer support through more traditional social ties identified above.

They face, therefore, the classic ideological contradiction of the transition to more capitalist forms of production. . . Their control, which was once embedded in the primary dependencies of production relations, is now based far more on law, property, coercion, market forces, and political patronage. They have themselves become much more dependent upon the state for their credit and inputs, for their supply of patronage resources, and for the ultimate force that guarantees their continued control over scarce land and capital.

The rewarding ties that now inextricably bind much of this class to the state mean, of course, that its members have become increasingly vulnerable to any events . . . that might jeopardize their access and influence. . .

(Scott 1985:311-312)

In Apatzingán, the authority and legitimacy of local brokers, directors of producer groups and regional authorities, have become more dependent on and vulnerable to changes in international market conditions.

Fourth, producers need to guarantee continued economic survival within the existing system; they organize collectively to gain access to production, but they do not directly confront the existing order. Instead, local

producers individually sabotage and undermine this commodity system when they perceive that the system in the form of local brokers does not deliver resources and benefits to which they, as producers, are entitled.

These issues emerge repeatedly in the analysis of the organization of this commodity system. They are critical factors in explaining both local level response, by brokers and producers, to the external commercial market, and its subsequent impact on the performance, or viability, of the commodity system. Scott's recent work shifts the orientation in socio-political research on the peasantry from examining infrequent open revolts to the more common daily resistance characterized by individual, nonvisible acts (Scott 1985). This is a major contribution, stressing the need to examine these phenomena, despite the theoretical limitations of Scott's work. In short, Scott does not provide the theoretical conditions for analyzing peasant resistance. Two concerns are relevant, particularly to the case of Apatzingán. First, how do peasants resist? That is, what mechanisms do they use? Why do they use certain means and not others? Are there variations across different situations? Second, under what conditions do peasants shift from passive resistance to open revolt? Scott's (1976) work details violent revolution. In Scott (1985), the emphasis is on the severe constraints and penalties that peasants face in defying the system. Scott emphasizes the reality of

these constraints, yet, analysis also needs to define the parameters and explain the conditions under which peasant producers may adopt a more openly defiant attitude. These themes appear repeatedly throughout the course of this analysis and are critical to explaining Apatzingán producers' resistance to production and commercialization regulations imposed by local and regional authorities. In the next section, the discussion shifts to recent work on the peasant economy, providing the theoretical basis to explain the political behavior expressed in Scott's work.

Political Economy and the Peasantry

In the 1970s and 1980s, empirical studies of capitalist development at the micro-level have theoretically contributed a better understanding of the relationship between capitalist agriculture and peasant economies. The works discussed below contribute by empirically testing and developing more precise definitions of this relationship at the micro-level.

First, I review major theoretical concerns, discussing the relevance for the case of Apatzingán. Second, drawing on Luis Llambi's discussions (1981 and 1988), I present a theoretical model of integration of the peasant economy into the capitalist system. Changing economic conditions explain the political behavior discussed in the moral economy section above. The link between economic conditions and socio-political behavior is the key to explaining the

particular process of development and local level resistance in Apatzingán.

Modes of Production

One of the original theoretical debates was whether peasant production constituted a separate mode of production, that is, a system at the same theoretical level as Marx's conception of the capitalist mode of production. If peasant production represents a distinct mode, then it comprises an economic structure, relations of production, and ideological and political realm credited to the capitalist system. Here, A.V. Chayanov's work on the peasant mode of production in Russia provides the major theoretical development along this line (1966). Peasant production and other economic decisions are explained by the peasant household's demographic life cycle, that is, the internal nature, not external relations with a capitalist market.

Latin American scholars encountered major problems using this subjective-oriented model to interpret Latin American peasantry; as a result, Mexican scholars developed more specific clarifications. Arturo Warman (1980a) distinguishes between the household's internal and external social relations, attributing peasant notions of reciprocity and subsistence to internal factors and relations of subjugation and exploitation to external factors of production for a capitalist market (see also discussion in

Deere 1987). Additionally, Roger Bartra (1974) conceptualizes simple commodity production as a "restricted" mode of production, in which the external capitalist market determines product prices and market conditions. Peasant producers constitute a distinct mode through family labor production for a commercial market, although they cannot distinguish between profit and variable capital (1974:73-79). In using a "restricted" concept of a mode of production, Warman and Bartra do not attribute distinct "laws of motion," in Marxist terms, to the peasant economy. They do not explain economic behavior in terms of the peasant's subjective rationality or internal peasant household demands. They assign greater weight to external market forces. The recent neo-Marxist theories develop the concept of articulation of modes of production (see Wolpe 1980), in which the peasantry is neither a separate mode on par with capitalism, nor completely subsumed as a class, such as the industrial working class.

Others subsume the peasant economy entirely within the capitalist mode of production, defining peasants as . . .

a class or fraction of class within different modes of production- a class that is essential in modes like feudalism and transitory (and only a fraction of a class) in others, like capitalism.

(de Janvry 1981:106)

De Janvry categorizes the peasantry as a class, completely subsumed within the capitalist system, not a distinct mode

of production. This interpretation of peasant social or economic behavior looks to factors in the capitalist economy, such as the "logic of capitalism" to explain local variations.

In short, this complicated and tangled debate arises over problems in adequately explaining peasant behavior. In the extreme, if the peasantry constitute a separate system, then their behavior must be interpreted in terms of their own needs and ideology, not in terms of external market conditions. At the other extreme, if the peasantry is a class within the capitalist system, then scholars need only understand the workings of the capitalist system to explain peasant production and behavior. Clearly, these theoretical extremes do not reflect the peasant's reality. The theoretical challenge is that peasant economy and society, in its various forms, rest somewhere along the continuum between two abstract extremes. Social science research has not yet developed theories which resolve this issue, although current research on petty commodity production and the peasant household provides clearer insights into the specifics of relationships between the capitalist economic system and the peasant economy.

As C. Deere discusses in a theoretical review of the peasantry in political economy, current research employs three theoretical approaches. First, some scholars, ignoring the endless "modes of production" debate, use the

concept of "form of production," in which peasant or farm households engage in commodity production for a capitalist market, without constituting a separate social formation (Friedmann 1978a and 1978b; Long and Roberts 1978; and Smith 1984a and 1984b). Second, others analyze the internal organization of the peasant household as a production unit involved in commodity production. Here, the research objective is to explain the basis for the peasant household's persistence and transformation as it produces more for a commercial market (Deere and de Janvry 1979; and Deere 1986).

Finally, the third approach analyzes the "subsumption" or integration of peasant production units to the capitalist economic system (see Zamosc 1979; Llambí 1981 and 1988; Goodman and Redclift 1982; and Roseberry 1983). This dissertation employs the third approach. The following discussion and model draw from these reviews, focusing at the level of the production unit, and analyzing its integration into a commercial market system.

Autonomy vs. Subsumption

Despite the complexity of these theoretical debates, there is a common theme running through the studies. The theme is autonomy, or rather, the loss of autonomy as the peasant economy becomes integrated, or "subsumed," into a capitalist economic system. By autonomy, I refer to the peasant's ability to independently make political and

economic decisions. Although not always clearly specified, autonomy in economic terms can be defined as the independent control over the means of production, specifically, land, labor, and capital, and, finally, the product.

Scholars have problems explaining "peasants" when they insist on categorizing "types," instead of focusing on the specific conditions which explain a process of integration into a capitalist system. Examining differential control over the means of production is more useful for two reasons: (1) in explaining variation within different case studies, and (2) identifying the mechanisms peasants can use to maintain some degree of autonomy, that is determining how they "resist." As discussed above, Scott's work on passive resistance also needs to explain why in some instances peasants passively resist, while in others, they actively revolt. Focusing on differential peasant subordination/subsumption to the capitalist system provides the conditions to explain peasant political behavior as advanced by Scott, both in his earlier work on moral economy and on passive resistance (Scott 1976 and 1985).

In categorizing relative autonomy, Llambí (1981 and 1988) defines the peasantry as those who retain independent control over the means of production. Maintaining control over land, their own labor, and capital needed for production enables peasants to decide (1) how to produce, how much to sell, and to whom, (2) when and under what

conditions to offer their labor, and (3) whether capital inputs are needed for the productive process (1981:131). Llambi defines two theoretically polarized categories: (1) relative autonomy, and (2) subsumption. Subsumption is the situation in which the peasantry is completely integrated into a capitalist economy, when all means of production have become fully commoditized. Given the disadvantages most peasants face competing with capitalist enterprises, commoditization often results in the peasant's loss of control over all means of production, in short, the complete proletarianization of the peasantry.

Accumulation and Social Differentiation

Yet, in making this transition, the potential also exists for capital accumulation and improvement of economic status. Here, external factors such as the state and market conditions critically affect the ability of specific peasant production units to gain from participating in a capitalist economy. Critical factors are: (1) economic restrictions inherent to the productive unit's geographic location, (2) inherent limitations of the product market or factors of production, (3) the interchangeability of different products, (4) the producers' own limitations, in reference to technical knowledge or experience, (5) time of insertion into the capitalist system, and (6) market conditions encountered (Llambi 1981:135).

In considering external conditions, the theoretical model (discussed below) explains social and economic differentiation among the peasantry integrated into capitalistic production. Different external conditions distinguish the specific case and regional studies which have documented capital accumulation and reinvestment. Cook's study of the brick-making industry in Oaxaca, Mexico, documents capital accumulation and some families' expansion from simple commodity production, or family labor, in to capitalist production, resulting in extensive use of hired labor. Cook's work contradicts orthodox Marxist assumptions that peasant production lacks capacity for capital growth, although Cook recognizes the limitations of small-scale transformation. The study also details the economic niches where capital accumulation may occur: (1) specialty production which satisfies traditional social demand, (2) as appendages of wider capitalist industry, and (3) archaic production industry (Cook 1984:79).

Other commodity production studies, such as Friedmann's work (1978a and 1978b), contend that family farms can effectively compete with capitalistic enterprises. Others contend that Friedman's analysis downplays the unique historical conditions of this case (Deere 1987:19). Market conditions, which provided high returns to family farms investing in capital rather than wage labor, resulted in unique historical conditions which enabled North American

family farms to successfully enter commercial wheat production.

Integration of the Peasantry: a Theoretical Model

Llambi describes the process whereby relatively autonomous peasants are subsumed or integrated into the capitalist system. By this process, he also identifies the position along a continuum into which peasants may fall, such as landless or landed-capitalist producers. According to Llambi, analyzing specific peasant economies requires: (1) definition of their specific production conditions and control over factors of production, (2) market conditions and the potential for accumulation and differentiation as the peasant economy integrates into the capitalist system, and (3) non-economic factors, such as institutions, policy, and the state, which may intervene to thwart complete integration.

Figure 1.2 presents a theoretical model of this process. Under conditions of relative autonomy, peasants retain control over all means of production, land, labor, and capital, and over the final product and make autonomous decisions regarding their use. Here, cultural and/or historic institutions determine access to resources and benefits, and factors of production do not constitute commodities; that is, they do not have a commercial price. As the peasant economy increases commercial market production, becoming more integrated into a capitalist

economy, the means of production also become commodities. Land, now private property, can be bought and sold, family labor receives a wage, and peasant producers become dependent on external capital to purchase required capital inputs. Complete subsumption, or full integration, is achieved when all factors of production are commodities that can be bought and sold.

External conditions (international and national markets, national policy, bio-physical conditions, and producer characteristics) determine whether peasant producers, in this process, are able (1) to accumulate capital and become successful capitalist producers, or (2) fail to reproduce the production unit, become proletarians, landless agricultural workers, and/or migrate to urban cities.

This model contributes two theoretical points. First, integration into the capitalist economic system may not necessarily be an inevitable process. That is, other external factors may counteract market expansion, ultimately affecting the degree and nature of capitalist expansion. Second, different patterns of integration clearly exist. Variations in types of peasantry producing for a commercial market can be explained both by: (1) different degrees of control over different means/factors of production, and

External Conditions

<u>International and National Markets</u>	Timing Market structure and conditions Product interchangeability
<u>National Policy</u>	State policy Capital investment State intervention
<u>Bio-physical Conditions</u>	Product characteristics Geographic limitations
<u>Producer Characteristics</u>	Mobility of production factor Technical knowledge

Integration Process

Producer's Relative Autonomy → → → Complete Subsumption

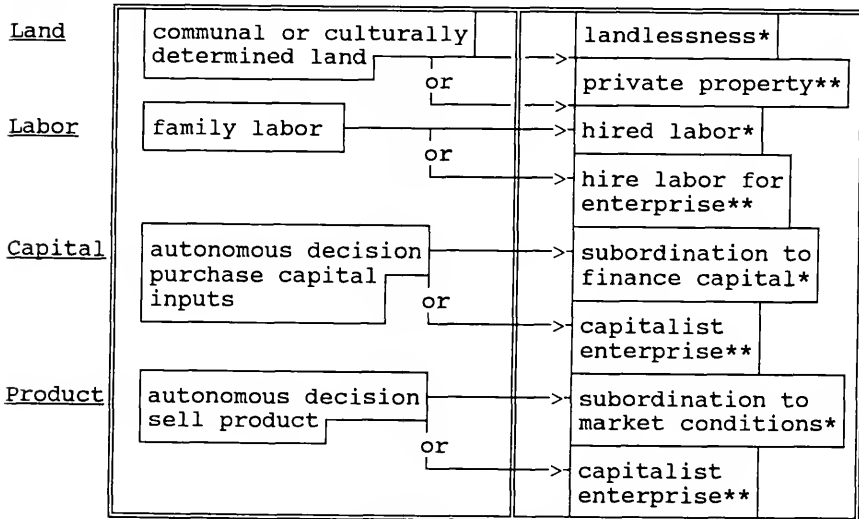


Figure 2.1. Model of Integration of Peasantry into Capitalist System.

* indicates "incomplete reproduction."

** indicates "capital accumulation."

(2) differences in external factors, such as natural conditions or external alliances with government agencies, which may also affect capitalist expansion in agricultural production. Table 1.1 includes a typology from the peasant economy literature.

Autonomy and Local Resistance

An analysis of how and why peasant producers adopt certain economic and political strategies must initially focus on those factors of production over which the producers still retain control (see Table 1.1). Independent control over these factors enables peasant producers to survive in a capitalist economy, if, as discussed above, market conditions do not prevent the production unit's reproduction. Thus, in resisting complete integration, peasants, or commodity producers, will most fiercely defend these factors over which they still retain control. Here lies the essence of Scott's "moral economy" argument. Peasants resist integration not because of an idealistic notion of traditional peasant society (as contended by S. Popkin 1979), but because full integration means they lose autonomous control over any means of production.

Table 1.1 presents a rough typology of different theoretical types of peasantry. The "+" signifies that, in these cases, peasants retain relatively autonomous control over this particular factor of production. The "-" signifies loss of control over the specific production

factor. The intent is not to definitively categorize Latin American peasantry; these attempts inevitably fail. However, differential control over the means of production provides base for interpreting different political behavior. In the case of agricultural wage laborers, fully integrated into a capitalist economic system, organizational forms of resistance are those characteristic of capitalist society, such as labor unions, often formed by alliances with other sectors of society. Petty commodity producers, who retain autonomous control only over their own domestic labor and perhaps productive capital, compete in the commercial market by exploiting their own labor, working longer and harder than wage laborers in commercial enterprises. Peasant agricultural producers, tied in various ways to capitalist markets, through dependence on market prices, finance capital, or technical assistance, obviously will not resist the market in those arenas over which they have no control. Thus, as repeatedly emphasized in earlier work on peasant revolts, peasants openly revolt when threatened by loss of control over their only production factor (Wolf 1969).

Looking specifically at the case of Apatzingán, ejidatarios growing cantaloupe for a commercial market are clearly not autonomous peasant producers. As described in the introduction, Apatzingán producers are organized into formal, legally-registered organizations through which they obtain the legal permits, the finance capital, the chemical

Table 2.1. Categories of Different Types of Peasant Subordination in a Capitalist Economy.

	Factors/Mean of Production			
	Land	Labor	Capital	Product
Relative Autonomy				
autonomous peasant	+	+	+	+
peasant, land rent	+/-	+	+	+
simple commodity producer	+/-	+	+	-
subordination to merchant capital	+	+	+	-
subordination to finance capital	+	+	-	+
semi-proletarianized	+	-	+	+
wage laborer	-	-	-	-
Apatzingán producers	+	+/-	-	-
Complete Subsumption				

+ = autonomous control over specific factor of production.
 - = loss of independent control over specific factor of production.

inputs, and the technical assistance required to produce an agricultural commodity, cantaloupe, for an export market.

In contrast to other studies of export agricultural systems, the capitalist system has not fully commoditized the regional agricultural economy. The Mexican government, by land reform, agricultural credit, infrastructural development, and ejidatario organizations of thwarted complete commoditization of land, in the valley of Apatzingán. As this commodity system study will indicate, Apatzingán ejidatarios resist any efforts to reduce their control in two arenas, land and the production process. As seen in Table 1.1, completely dependent on the external market to supply all other factors of production, Apatzingán producers can only resist the commodity system's operations in these two areas.

Different Levels of Analysis: the Commodity System

The agricultural commodity system, as a social, political, and economic system, provides a useful model for linking macro-level processes with local response. By taking a vertical slice through different levels of an economic system, this study looks at the interaction of participants at different levels. The commodity system does not itself constitute a theoretical perspective. This approach follows the argument presented by DeWalt and Pelto (1985) and McClelland (1965) in which . . .

. . . the general-systems approach is neither a formula nor a doctrine, but a cluster of

strategies of inquiry/ not a theory but an organized space within which many theories may be developed and related.

(McClelland 1965:271)

This requires that researchers be aware and explicit about the different dimensions, research questions, and objectives at different levels of analysis.

As defined, an agribusiness commodity system encompasses all participants involved in the production, processing, and marketing of a single farm product, in this case, cantaloupe for export to the United States (Goldberg 1974). The commodity system includes chemical suppliers, agricultural laborers, farmers, packing house employees, government technicians, representatives of U.S. distributing companies, and wholesalers and market distributors in the United States. Within this system, both Mexican and U.S. agencies also coordinate, regulate, and structure the production and commercialization process.

The commodity system as a unit of analysis provides a practical framework for linking different levels of organization within a discrete commodity system. In the case of Apatzingán, the commodity systems approach allows the study to examine the external conditions (detailed in Figure 1.2) at the macro level and their impact on the integration of Apatzingán producers at the micro level.

In Apatzingán's case, international agricultural trade, through supply and demand, imposes general market

conditions. The specific market structure is determined by the numbers and size of U.S. buyers, barriers to entry into the local market, degree of vertical concentration, mobility of resources, and foreign investment. This identifies specific non-pecuniary mechanisms used by the Mexican government and foreign buyers to determine the market structure. The market structure of Apatzingán operates as a monopsony, in which there is a single buyer, a group of U.S. companies operating as a single buyer, of a particular resource, in this case, cantaloupe³. Despite these constraints, there is strong evidence of local organizations and producers actively resisting, negotiating, and allying with different external agencies and businesses at different times throughout cantaloupe's history in Apatzingán.

Studies of specific commodity systems demonstrate great variation in the organization of different commodity systems, pointing to the need for further case research.

Grain Crops

Much of Mexican social science research on agricultural commodities has concentrated on grain crops, examining the transformation of agricultural systems in response to foreign capital investment, foreign market demand, and

³. If U.S. buyers controlled production, this would constitute a monopoly. In contrast, U.S. buyers in Apatzingán finance overproduction, driving down local prices. The buyers control U.S. market distribution, they influence local price and supply by restricting purchases, hence, the monopsony.

national agricultural policy (Arroyo, Rama, and Rello 1985; Barkin and DeWalt 1985; Barkin and Suárez 1979 and 1982; DeWalt 1985; DeWalt and Barkin 1987). Most of the studies noted above examine structural processes at the national level, particularly the role of agricultural policy.

Montañez and Warman's studies of maize producers present comparative analysis of maize production systems and Mexican producers, based on differences in land and labor intensity, access to water, and agricultural policy (Montañez and Warman 1985; and Warman and Montañez 1982). In this way, comparative studies and case studies of specific commodities expand social science's understanding of regional variations in commercial agricultural systems.

Traditional Export Systems

Social science research on export agricultural systems often focuses specifically on rural social class relations and the impact of export agricultural systems (Barry 1987; Nolasco 1985; Paige 1975; Williams 1986; and Wolf 1975). Some point to export agriculture itself as the major factor in restructuring the organization of rural production, forcing smallholders out of production and into the agricultural wage labor force (Burbach and Flynn 1980). In a comparative analysis of export agriculture and social movements, Paige schematizes relations between "non-cultivators" and "cultivators", based on differential control over land and capital. In commodity agricultural

systems, Paige points out that local elite, as middlemen or economic brokers, draw their income from commercial capital, not from land. The larger profits provide local brokers with "greater flexibility, wealth and negotiating ability" (Paige 1975:48), allowing reforms which redistribute some income and dissipate resistance. Small producers do not form class-based organizations, remaining divided by "economic competition, internal wealth stratification and structural isolation" (1975:46). Paige's study demonstrates the contribution of analysis of specific export systems, to develop better theories about the relationship between commercial agricultural systems and socio-economic groups. Traditional tropical export systems, such as bananas, coffee, or tobacco, tend to be vertically centralized with one or a few companies controlling the entire system from production through distribution (Jauregui 1980; Nolasco 1985; and Williams 1986).

Fresh Fruits and Vegetables

Some scholars have begun to examine more closely fresh fruit and vegetable systems, and the impact of international agricultural trade. Several factors in fresh fruit and vegetable systems call for careful analysis in social science research: (1) structural complexity at national and international levels, (2) recent technological advancements, and (3) market supply and price volatility. With these theoretical concerns, some social science research examines

the social organization of discrete commodity systems (see Friedland, Barton, and Thomas 1981; Wells 1989). In a review of the commodity systems approach in North American sociology, W. Friedland identifies five research foci: (1) production practices, (2) grower organization, (3) labor as a factor in production, (4) scientific production and application, and (5) marketing and distribution (Friedland 1984). Friedland's own research on different commodities, including lettuce, tomato, and wine and table grape, points to the unique character and social organization of each crop. These findings further indicate that, in many commercial crops, there exists a discrete commodity system which constitutes a social and economic reality (Friedland 1984:223). U.S. research has concentrated on the internal organization of commodity systems, focusing particularly on relationships between management and labor and the impact on the organization and performance of the system (Friedland, Barton, and Thomas 1981). In Latin American social science research, studies often focus on the role of foreign agribusinesses in agribusiness commodity systems (Domike and Rodríguez 1976; and Rama and Vigorito 1979).

In his study of strawberry production in Zamora, Michoacán, E. Feder, identifies components similar to Apatzingán. In Zamora, U.S. businesses control production, processing, and distribution to the United States (Arizpe and Aranda 1981; and Feder 1977). Local producers are

completely dependent on the U.S. companies for production technology and financing, a situation Feder describes as "strawberry imperialism." Feder alludes to other elements, suggesting a more dynamic system and local resistance: (1) competition between brokers, (2) shifts in control by different brokers, suggesting extreme market volatility, (3) Mexican private bank investment in some local producers, (4) local conflicts over efforts to restrict production, and (5) the growth of charismatic peasant movements in the early 1970s (Feder 1977:36-127).

Much of the research on Mexican fresh fruit and vegetable systems has focused on Sinaloa. Horticultural and other commercial export crops first expanded into northwest Mexico with the construction of large irrigation systems. Government irrigation and credit subsidies, agricultural research, technical assistance, transportation systems, and chemical inputs provided the economic conditions within which the export horticultural crop production system developed (Hewitt de Alcántara 1976). Sinaloa dominates national domestic and export horticultural crop production, and ties between U.S. financiers and regional producers are strong. Some scholars contend that U.S. buyers and financiers control market distribution, production technology and much financial assistance, thus dominating regional directions in agricultural development (Sanderson 1986:64-118). Others question this interpretation of fresh

fruit and vegetable export systems. In research on Sinaloan producers, D. Mares contends that producers, supported by the Mexican government, successfully organized to directly market Mexican fruit and vegetables in the United States (Mares 1981; 1982; and 1987); that is. . .

this Mexican participation meant that a major transformation had taken place: Southern domestic capital had replaced Northern foreign capital in a dynamic industry. Even more damaging to the dependency perspective, my research shows that these Mexican growers have achieved substantial, albeit delicately balanced, influence in Mexican national policymaking.

(Mares 1987:4)

As evidence, he cites several court cases in which Mexican producers, aided by both Mexican government and private U.S. research and advertising firms, defeated Florida producers' attempts to pass non-tariff barriers and to introduce dumping charges against Mexico (Mares 1987:203-225).

In reality, the two perspectives are complimentary, not incompatible. Sanderson's study, as does much of the Mexican social science research on commodity systems, focuses on the structural transformation of a system, examining changes in capital flow, concentration of resources, changes in markets, and production decisions (see also Barkin and Suárez 1979, 1982, and 1983; Montañez and Aburto 1979; Rama and Rello 1980; and Rama and Vigorito 1979). At the regional level, Mares' study examines the organization of the system, that is, the shifting alliances

and conflicts over time among the major regional interest groups: the U.S. distributors, the U.S. government, Sinaloan producers, and the Mexican state. Mares' Sinaloan producers are constrained by the same market conditions that Apatzingán producers face; the difference lies in their economic and political control over regional resources, their organizational capacity, their ability to build alliances with external financial sources, and the Mexican government's dependence on Sinaloan commercial agriculture. Regional level analysis over time does not refute broader claims of a structural transformation; rather, it examines the conditions under which Sinaloan producers could successfully negotiate with U.S. distributors and influence U.S. government policy. In other cases, when Sinaloan producers' interests differed from national objectives, the Mexican government, more concerned about binational U.S. relations, quickly squelched producers' efforts, as Mares himself notes (Mares 1987:225). Other scholars, researching the role of the state, have pointed to the role of alliances between farmer organizations and the state has necessary for succesful expansion in commercial agriculture (Evans 1986; and Krasner 1973).

Conclusions

Explaining the crisis in cantaloupe production requires analysis of the complex relationship between the crop's technical requirements, as well as the social, political,

and economic aspects of capitalist agriculture, the state, local level organization, and the ejidatario. This chapter reviewed dependency theories of development and the peasant economy and petty commodity production literature, presenting the theoretical framework of the study. Also presented is a theoretical model of the integration of the peasantry into a capitalist market system.

At the micro-level, the objective is to examine the impact of external factors, the mechanisms peasants use to maintain some degree of autonomy, and the different pattern of economic integration which results. The theme is autonomy, or rather, the loss of autonomy as the peasant economy becomes integrated, or "subsumed," into a capitalist economic system. Autonomy in economic terms is defined as the independent control over the means of production, specifically, land, labor, and capital, and, finally, the product. Apatzingán ejidatarios are subordinated to a capitalist economy through financial capital and market production. Within the constraints of external conditions, they adopt political and economic strategies which defend those means of production over which they still have some control.

The agricultural commodity system, as a social, political, and economic system, provides a useful model for linking macro-level processes with local response. By taking a vertical slice through different levels of an

discrete commodity system, this study examines at the interaction of participants at different levels and the process of economic dependency. In the case of Apatzingán, the commodity systems approach allows the study to examine the external conditions at the macro level and their impact on the integration of Apatzingán producers at the micro level.

CHAPTER THREE

AGRICULTURAL HISTORY AND DEVELOPMENT IN LOWLAND MICHOACÁN

Introduction

The state of Michoacán, situated in southwestern Mexico, has a range of environmental, cultural, and economic zones, producing wide diversity in a small area totaling only 59,864 square kilometers. The geographic sub-regions differ significantly with respect to their environment, demography, history, and culture, divided between the highlands, with a high population density of 60-75 persons per square kilometer, the southwest coastal region, with a density of 13 persons per square kilometer, and the Tierra Caliente, literally, the "hot country," with a population density of 15 persons per square kilometer. The valley of Apatzingán is situated in the lowlands of Michoacán. The highland and temperate zones, have the highest rainfall, generally greater than 50 inches per year, with cooler temperatures, while the lowlands are known for severely hot temperatures, limited rainfall between June-October, and geographic isolation from the rest of the state.

Throughout the prehistoric and historic periods, the population always concentrated in the Michoacán highlands,

due both to climatic factors and accessibility to Central Mexico. Anthropologists have conducted numerous classical community studies of indigenous and mestizo groups in highland Michoacán, such as Tzintzuntzán (Foster 1967b), (2) Cherán (Beals 1946), and (3) Naranjo (Friedrich 1970). Anthropological interpretations of traditional Mexican community social organization reflected this earlier work in the indigenous, communal landholding, autonomous Tarascan villages of highland Michoacán. These social patterns do not hold true throughout the region.

In contrast, fewer studies have examined the Michoacán lowlands, known commonly as the tierra caliente¹, literally, the "hot country." The lowlands region developed a reputation as a frontier area, an escape for convicted felons and other rural inhabitants from other more heavily populated neighboring states. Despite the regional isolation and reputation, the valley grew to become Michoacán's center of commercial agricultural activity, with the majority of export and grain crops produced in the lowlands.

1. This geographic distinction extends to local generalizations about personal character. People from the tierra fría are supposed to be more traditional, closed and cautious. People from the tierra caliente describe themselves as more outgoing, outspoken, and sharper, both in defending themselves and in taking advantage of others.

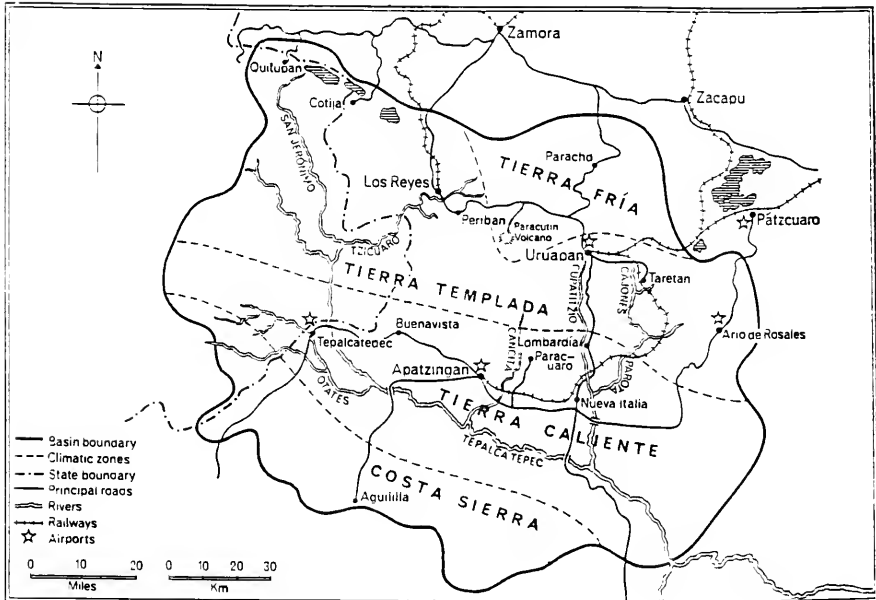


Figure 3.1. Map of Michoacán.

This chapter examines the agrarian history of the lowlands of Michoacán within the context of national Mexican agricultural development. Important factors shaped the development of commercial agriculture, the formation of the producer organizations, and the modern regional economy. One, during the colonial and independence periods, the region and its residents were isolated from national life and development. Second, after the Mexican Revolution, the government intervened to develop the regional economy and institutionally supported small farmers, in contrast with other isolated Mexican regions. Third, despite the region's physical isolation, international export agriculture has historically dominated the agricultural economy of the valley, generally financed by U.S. capital. The end product is an export agricultural system which differs from other export systems, a combination of the valley's unique history, state intervention, and important role of commercial agriculture.

Colonial and Independence Periods

During the pre-Conquest period, the lowland region around the municipality of Apatzingán was occupied by scattered small groups of sedentary, mound-building people². The culture was moderately advanced, drawing from cultures

². Yácatas, a local term for small mounds, can be still identified scattered along the river basin area, small hills rising in the middle of producers' fields.

in West Mexico; based on the ceramic evidence, contacts with the Tarascan culture in the Michoacán highlands were negligible (Kelly 1947). After the Conquest, during the colonial period, the valley of Apatzingán remained relatively unsettled, due to its hot climate and poor health conditions. Indigenous populations were drastically reduced in population by European diseases; estimates are that from 40,000 inhabitants in 1520, the population was decimated to 3,092 in 1597 (Aguirre Beltrán 1952). The Spanish colonial settlers had little interest in settling such a malaria-infested, arid environment. The Spaniards claimed only 25% of the lowland region by 1650, and by 1715, had increased those holdings to no more than 36% (Barrett 1975a). The Michoacán lowlands remained sparsely settled throughout the entire colonial period. From early on, the region produced some tropical commercial crops, such as sugar cane, rice, and indigo, although the valley was primarily devoted to livestock production.

During the 18th century, increased population pressure in other parts of Mexico resulted in an influx migration of poorer farmers searching for better economic conditions. The majority of these migrants lived as estate dependents, working either as tenants or in seasonal labor. During the 18th century, the decline of the sugar industry, changing world market conditions for cotton, and rapid population growth in the lowlands led to deteriorating economic

conditions. During the first agrarian rebellion of the 1800s, led by Father Miguel Hidalgo, estate residents in the Bajío, an area long dominated by commercial agriculture, provided the major political support base. The later 1810 insurrections, led by Father José María Morelos, a priest formerly under Father Hidalgo, first drew the support of lowland residents of Michoacán against the Colonial regime. In contrast to other commercial agricultural regions, such as the Bajío, the estate dependents and villagers in lowland Michoacán and Guerrero united with the local elites to revolt against the colonial regime. That is, residents blamed an outside force, a distant colonial government for local economic problems, and the insurrection did not divide along local class lines (Tutino 1986:187-188). After fighting unsuccessfully for several years in Michoacán and the state of Morelos with Spanish troops, Morelos retreated to his stronghold in the Michoacán lowlands, and on October 22, 1814, in the central plaza of Apatzingán, Morelos presented a constitution calling for an independent Mexico. In response, the Colonial troops burned Apatzingán and initiated a violent military repression in the region, instilling further resentment of the colonial government (Durán Juárez and Bustín 1983:46). Still, Morelos' regional movement failed to attract the national rural support it needed to overthrow the colonial regime. Also, the political movement never resolved the inherent conflict

between the elites' modified reform programs and the villagers' grievances.

During the 19th century, the region, along with parts of the neighboring state of Jalisco, developed into a ranchero³ commercial economy. This system developed in regions with both low population density and minimal integration into the national commercial economy. The communities were stratified societies, but unlike the hacienda economy, the landowners worked the land alongside their tenants and sharecroppers (Tutino 1986:239-240). This produced a more complex, dynamic rural social structure, as rancheros...

occupied the social space between landed elites and the rural poor. They might link those groups, or separate them. They might ally with one, the other, or neither.

(Tutino 1986:342)

In 1903, the emigration of an Italian family headed by Dante Cusi profoundly impacted on the regional agricultural economy, supplanting local ranchers in the eastern part of the valley, in the area of Nueva Italia and Lombardía. Dante Cusi, an Italian immigrant, arrived in the valley with 20 families and bought the hacienda at Lombardía, totalling

³. The ranchero economy is characterized by relatively small, dispersed landholdings, devoted to livestock production. The proprietor is a ranchero. In Apatzingán, locals still reinforce a ranchero cultural identity by including cowboys and skillfully trained dancing horses in festivities and parades.

28,000 unirrigated hectares, under a colonization contract from Porfirio Díaz (Barajas 1979a:30). Over the years, Dante Cusi constructed and expanded the irrigation systems, irrigating a total of 61,449 hectares. The irrigation systems required a complex and sophisticated crop rotation management, whereby large parcels, from 100-150 hectares, called tablas, were planted with two crops/year with long fallow periods (Santos Rivera Camareña, personal communication 1988). The trapezoidal shape and layout according to local topography facilitated the gravity irrigation of large areas, and many of these constructions continue to be used today. The Cusi haciendas produced primarily rice and lime, developing productive commercial agricultural enterprises previously unknown to the region. From the beginning, in 1911, the enterprise produced 5000 tons of rice on 1250 hectares, achieving yields of 4 tons/hectare (Barajas 1979a:31). Lime production, consisting of over 80,000 trees, produced both fresh limes and oil for lime extract, the majority exported to Paris and New York (Durán Juárez and Bustin 1983:50-51).

As described, the workers on the Cusi haciendas, both locals and migrants who had settled from neighboring regions were...

not of a humble and diligent species. They looked at their patron as an equal, and in the best of cases, as a patriarch.

(González 1971:138)

In addition, seasonal migrants came from communities in highland Michoacán to work at harvest time, both on the Cusi hacienda and the nearby sugar cane plantations. The Cusi managers contracted labor groups in the Michoacán highland communities, offering travel funds in anticipation, later deducted from final wages after the harvest (Glantz 1974:61). The Cusi family expanded their holdings and operations because they could easily acquire unexploited ranches, which they then converted into commercial enterprises. The hacienda provided employment, housing, and higher wages both to permanent local employees and seasonal migrants. Beyond the Cusi operations in Nueva Italia, the rest of the valley remained divided among ranches, with large areas of desert vegetation set aside for livestock.

The Mexican Revolution

During the Mexican revolution, lowland residents of the valley did not extensively participate in the major insurrections. As discussed above, ranchers divided in their political leanings; ranchers of the states of Hidalgo and San Luis Potosí sided with the revolutionaries, while those of the Michoacán highlands near Lake Chapala and Jalisco were strong opponents of agrarian reform (Tutino 1986:342). Apatzingán did not experience the political upheaval to the degree of the central highlands, such as in Morelos, although there were local troops fighting under the command of General Lázaro Cárdenas (Chávez 1980a and 1980b).

In contrast, the west central state of Jalisco and parts of highland Michoacán later became the stronghold of the Cristero rebellions in 1926 against the revolutionary government.

In the tierra caliente, locals remained outside of agrarian insurrections. Many ranchers were not very wealthy, often related to their estate dependents through kin ties, and committed to the idea of family land ownership (Tutino 1986:344). Rural poor viewed the landowners not only as their oppressors, but also as their patrons, and the rigid divisions that existed between the Michoacán highland communities and the mestizo outsiders did not develop in the lowlands. The pre-revolutionary ranchero economy produced a social organization unlike the commercial agricultural estate systems of the Bajío. This social system set the structure within which social relations in lowland Michoacán continued to evolve. Later state intervention and the expanding commercial export agriculture transformed the regional economy. Still, despite increasing tensions over wealth and power differences, the small farmers and ranchers of the valley of Apatzingán continue to view the outsider, be it the Mexican government or the foreign investor, with the greatest suspicion.

Agrarian Reform and the Ejido

Historians contend that the Cristero rebellion's strength demonstrated to the post-revolutionary government

the failure of modified land reform programs (Tutino 1986:344-347). Rather than halting land reform, the next president, General Lázaro Cárdenas implemented major land redistribution, finally breaking up the landed base of elites in many regions. The government's purpose was twofold: (1) to destroy the rural elite as political opposition, and (2) to build the Mexican peasantry as a political support base for the government. In rural areas, land reform intended to improve rural incomes and living conditions for rural poor, but this redistribution was not to impede national development. At the national level, the government moved to strengthen its position as an emerging state and to accelerate national economic development. Under Lázaro Cárdenas, the government initiated land redistribution on a scale beyond all previous presidencies.

In 1930, 4 years before Cárdenas became president, ejidos occupied only 13.4% of all cultivable area, 13.1% of all irrigated land and 10.2% of the total value of land. In 1940, after his presidential period, these values had increased to 47.4%, 57.3% and 35.9%, respectively.

(Eckstein 1966:61)

Many of the Michoacán highland communities had organized independently during the revolution (Embriz Osorio 1984:99-119). The Michoacán highland communities were much more politically active during the 1910-1920s than their lowland neighbors. Additionally, the revolutionary governors, all generals during the revolution, Ortiz Rubio,

Francisco J. Múgica, Sánchez Pineda, Enrique Ramírez, and Lázaro Cárdenas, between 1917-1932 distributed 135,214 hectares, predominately to highland communities, although only 15% of that was irrigated (Embriz Osorio 1984:118).

In the valley of Apatzingán, the government assumed primary responsibility for land redistribution and only after the revolution. Between 1930-1970, the government expropriated 350,000 hectares in the valley, the majority from the haciendas of five families: the Cusi, Sierra, Treviño, San Isidro Ticuilicán, and Melchor Ortega families. The holdings of the Cusi family, in Nueva Italia and Lombardía, were irrigated, commercial lands, but the remaining holdings were traditional livestock ranches, still in desert vegetation and lacking irrigation (Barajas 1978). The government created 135 ejidos, with 13,194 ejidatario members, thus setting the structure for the local agricultural system. Additionally, in the valley, this transformation occurred rapidly; approximately 50% of the ejidos that obtained definite adjudication waited less than two years (Durán Juárez and Bustin 1983:64). Furthermore, under the later regional development program (discussed in the next section), land distribution in the valley of Apatzingán differed significantly from other regions, even in the neighboring Michoacán highlands. Expropriation centered in the river basin of the valley, consisting of irrigated land, the most fertile, and most accessible. By

1970, 66% of ejidatarios had irrigated land, ranging from 5-30 hectares, with an average of 10 hectares (Durán Juárez and Bustin 1983:69). In these areas, ejidatarios moved into better economic situation relative to ejidatarios on temporal land, with easier access to commercial agricultural production.

Under the Cárdenas administration, two systems of peasant organization were established: (1) comunidades, and (2) ejidos. Comunidades were based on indigenous communities, which usually retained communal landholdings, whereas the ejido generally referred to the redistribution of private landholdings that had been previously confiscated (Daniel Sánchez Perez, personal communication, 1988). Two types of ejidos, the individual and the collective, characterized Mexican land reform programs. In the individual type, the ejido retains communal property use rights over the land, but, in reality, ejidatarios farm their respective parcels individually. In the collective ejido, land is worked in collective indivisible units to produce crops destined for the market or industrial processing, where individual production is uneconomical or inefficient (Eckstein 1967:113).

In addition to the ejido economic organization, the Mexican government also established a political structure for peasants, under the National Peasant Confederation (CNC), a sub-sector of the Institutionalized Revolutionary

Party (PRI) in 1938. The objective was both to give peasants access to limited political participation and to mobilize the new land reform beneficiaries as a political support group for the government. Lázaro Cárdenas established the Confederation of Agrarian Communities and Farmer Syndicates as the local counterpart organization. The leagues have been politically active in the Michoacán highlands, where the groups were based on indigenous community organizations autonomously established earlier to reclaim land (Embriz Osorio 1984:123-126).

The Collective Ejido in Michoacán

Under the Agrarian Code of 1934, the government proposed to maintain productive commercial agricultural enterprises in their entirety, organizing ejidatarios to produce and market commercial crops collectively. The government saw the collective ejido as a means of achieving two goals, both to increase commercial agricultural production and to economically develop the ejido sector.

In the valley of Apatzingán, the Cusi family hoped that the Cárdenas regime would not expropriate their holdings in Nueva Italia and Lombardia because of their 40 successful years as a commercial agricultural enterprise and employment of 1500 agricultural workers. Responding to the 1934 telegram from Lázaro Cárdenas, notifying the family of the expected expropriation, the Cusis argued that they. . .

had been good hacendados, that they had been advancing the goals of the Revolution, giving the

workers even more than they had asked, specifically work rights unknown before. They mentioned other haciendas, much more extensive, in other Mexican regions, which were not expropriated.

(Chávez 1978:35)

Yet, this expropriated hacienda and the collective ejido in the Laguna area of the Bajío (see Restrepo and Eckstein 1979), were established as the two largest collective ejidos in Mexico. These two constituted Lázaro Cárdenas' experimental laboratory, to test the economic feasibility of the collective ejido.

In Nueva Italia, the government expropriated 32,136 hectares, 2500 already under irrigation, as well as buildings, machinery, processing plants, livestock, and fruit plantations, distributed among 1,375 families. As proposed, ejidatario members would work in the irrigated commercial crops and manage the estate's operations collectively, earning a salary based on their individual contribution level. Profits were remunerated to the National Ejido Credit Bank, to repay the original loans and acquire autonomous collective ownership of all commercial enterprises (Glantz 1974:112-120). The Bank, by providing technical and financial assistance, assumed control over production operations. For the average ejidatario, there was little to distinguish the former daily wage under the Cusi managers from the "anticipated payment" from the Bank.

The Bank's continued external domination of the ejido enterprises prevented internal initiatives and legitimated the role of intermediaries.

The conservation of the principal structures of production favored social substitution, and, thus, the emergence of a directive group that took advantage of their new social position to become intermediaries between the bank authorities and the ejido population. As a result, they consolidated their power over the collective organization.

(Durán Juárez and Bustin 1983:77)

The ejido directors, including both the ejido commissioner and head of the vigilance committee, assumed this degree of control due to the ejido's internal organization. Hierarchically organized, ejidatarios belonged to cooperative units, according to their productive activities. The administrative structure directing each unit enabled a relatively small group of directors to centralize administrative decisions.

Organizational factors, inherited both from the hacienda's organizational structure and created by the Bank, contributed to a growing demoralization among small producers. From before, the original heterogeneity of hacienda workers did not foster the development of any collective sentiment. The original stratification persisted, as the most educated and capable quickly moved into authority positions in the ejido. The division intensified between the skilled ejidatarios and the ordinary

field workers. The directors coordinating different productive units, often dispersed over a wide area, worked and lived at a physical and social distance from those working in the fields. The Bank itself introduced new organizational problems, in its paternalistic role towards financing and coordinating commercial activities and its inability, or unwillingness, to control the corruption characterized by many in charge of the productive units, as well as some employees of the Bank (Glantz 1974:124-130).

Facing the government's economic and political control, the ejidatario's response paralleled the passive resistance and footdragging discussed in earlier sections in Chapter One (see Scott 1985:28-41). Ejidatarios manifested their resistance by not attending general assembly meetings, not participating in internal political elections, sabotaging crop production and processing, and carelessly performing production tasks (Glantz 1974). Although the ejidatarios resented the outside control and lack of ejido autonomy, they did not formally organize to resist.

In 1944, confronting accusations of internal corruption and financial mismanagement, the Bank divided the original ejido into four: Nueva Italia, Gámbara, El Capire, and Lombardía, with Nueva Italia retaining the largest land area of 23,500 hectares. The Bank divided ejidatarios into credit groups, in which the group chief assumed responsibility for credit and input distribution. This

further reinforced the hierarchical administrative structure of the collective enterprise. Internally, conflict arose between those who supported the division and those against, resulting in band warfare and more than ten murders in the final two years (Glantz 1974:138). The Bank tried to manage each ejido collectively, but by 1940, with a shift in government priorities, the parcels, orchards, and remaining livestock holdings were divided among ejidatario members. Although retaining the ejido status, producers farm their parcels individually. Cárdenas' experiment with the second largest collective ejido in Mexico had failed.

The State and Regional Development

During the administration following Cárdenas, under Miguel Alemán, Mexican government policy shifted from a social concern in developing the ejido sector to national goals in promoting national economic development by increasing agricultural production and commercial agriculture. Credit, research, extension, inputs, and infrastructural development were targeted to those areas, predominately in Northwestern Mexico, where investments could produce the greatest economic returns. This policy shift undermined both the commercial ejidos' productivity and ability to compete with private producers (Hewitt de Alcántara 1976). The result was increased resource concentration in the large commercial farm sector (Grindle 1986:61-67; Sanderson 1981a:133-167). This "bimodal"

pattern of agricultural development, as defined by Johnston and Kilby, results because "large-scale, highly commercial farm units in northern Mexico have accounted for the bulk of the increase in farm output and an even larger fraction of the growth of commercialized production" (Johnston and Kilby 1975:261). The River Basin Programs developed by the Alemán administration were partly designed to compensate for this regional concentration, focusing development projects on outlying, isolated river basins. The state proposed to exploit water resources, through dam and irrigation construct, both to commercially develop isolated regions and to generate hydroelectric power for national use (Barkin and King 1970).

In 1947, the Miguel Alemán administration established the Commission of the Rio de Tepalcatepec, later absorbed by the Rio Balsas Commission in 1960, as part of Mexico's river basin development programs. Apatzingán's development corresponded to the Mexican government's program to achieve national and regional economic goals by developing formerly neglected river basin regions (Barkin and King 1970:72-92).

Although originally conceived to develop all of Michoacán, 90% of the budget was concentrated in the valley of the Tierra Caliente (Juarez Durán and Bustin 1983:192). Greater than 50% of the total budget was slated for irrigation construction, most of this concentrated in the valley (Barkin and King 1970:133). In the valley of

Apatzingán, irrigated cultivable land expanded from 10,000 hectares in 1947 to 85,000 hectares in 1970, primarily in the ejido sector.

The integrated development commission proposed to develop regional infrastructure, by construction of irrigation systems, roads, electricity and health care and educational services. The Commission expanded the road network; the most important for the tierra caliente residents was the paved highway between Uruapan and Apatzingán, completed until 1955. Prior to this time, producers shipped all market crops, both national and export, out of the valley by railroad. In addition, under a limited 10% of the total budget, the Commission constructed schools, drinking water systems, rural electricity systems, urban improvements, and health facilities. In these projects, the Commission financed the materials, and the community residents the labor (Barkin and King 1970:137).

The combined impact of both major land redistribution, under Cárdenas and Alemán, and irrigation system construction transformed the regional population and economy. From 1950-1960, regional population doubled, due in part to higher birth rates, lower death rates, particularly infant mortality, and net in-migration (Barkin and King 1970:141). Many of the immigrants initially came to work in irrigation construction, later settling in the region. Others migrated from poorer, highland areas of

Michoacán, and neighboring states of Guerrero, Jalisco, and Oaxaca. The valley of Apatzingán was seen as an area of economic opportunity. Apatzingán itself acquired a reputation as a rough frontier town, where men carry guns to this day, but it was also a place where there were economic opportunities for those willing to work.

Thus, the new irrigation systems completely transformed the regional economy. Michoacán has never become a dominant region in total national agricultural production. Still, in Michoacán, the valley of Apatzingán alone now cultivates 43% of total cultivated area in the state (Barkin and King 1970:145). Irrigation also allowed producers to plant two crops/year, whereas previously 78% of cultivable land had been planted only during the rainy season. In general, under irrigation, local crop yields climbed to national averages, while in the highlands, yields are much lower. In their study, Barkin and King estimate the project's impact on the agricultural economy, noting that cultivated area increased by 150%, gross monetary yield/hectare increased by 108%, and total production increased by 412% during the first ten years of the development program (Barkin and King 1970:177). They note that these gains were achieved by substituting commercial crops, primarily cotton, for subsistence crops.

The Commission of the Rio Tepalcatepec was consolidated into the Rio Balsas Commission in 1960, incorporating

adjacent river basins along the Rio Balsas. This commission was initially headed by then ex-president General Lázaro Cárdenas. To this day, Apatzingán producers compare the earlier Commission favorably with the bureaucracy and corruption of current state agencies. The Commission operated autonomously to resolve regional development problems. That is, the commission could resolve problems independently and rapidly, with its own funds. It oversaw the programming of all crops, working with producers to coordinate water management, bank credit, credit and input distribution, and technical assistance. When the Commission was dissolved, each agency reassumed individual authority over its respective jurisdiction; as a result, resolving local problems requires working with a variety of agencies, each with its own agenda and bureaucracy.

Cotton and the Expansion of Commercial Agriculture

The directors of the Rio Balsas Commission hoped that irrigation would enable regional producers to expand into horticultural production of a wide range of fruits and vegetables for both national and United States markets. However, cotton's rapid expansion during the 1960s prevented regional diversification of commercial agriculture. Only cantaloupe continued on a limited commercial scale, due to the already established U.S. market contacts.

Michoacán entered into cotton production late, at a time when other Mexican cotton-producing regions were

already experiencing financial setbacks due to decreasing world market prices and increasing production costs. Still, at the regional level, cotton generated critical income and employment, transforming the regional agricultural structure and economy unlike any other crop. Cotton expanded throughout the valley but concentrated in the area of Nueva Italia, which in 1965, produced 33% of the total hectares (Durán Juárez and Bustin 1983:99). Other areas, near Tepalcatepec and La Huacana, could not expand into commercial agriculture until the irrigation system was extended. At its height, during the 1964/65 season, cotton covered 50,000 hectares, greater than 50% of the irrigated cultivable land in the valley.

Cotton had major impacts in several areas. In the valley of Apatzingan, the cotton cycle overlaps with the rainy season, with planting in April and harvesting in October. Theoretically, the producer can grow another crop during the dry season, with irrigation, but most cotton financiers preferred to leave the land fallow during the dry season. As a result, cotton tied up most of the cultivable land in the valley, land that could have been used for other crops. In this case, a commercial crop significantly displaced traditional production of maize or sesame during the rainy season.

Also, cotton legitimized and institutionalized land rental in the Tierra Caliente. The Mexican government,

concerned about risks involved in cotton production, did not initially finance cotton production. Foreign capital, primarily from U.S. companies, dominated production and commercialization. Financiers, renting ejido parcels, expanded cotton production into land newly opened by the government's construction of irrigation systems. The ejidatario lacked the capital to clear the desert vegetation characteristic of the region; thus, many ejidatarios were forced to enter into rental contracts in order to clear their own land for cultivation. In analyzing irrigation's impact on commercial agriculture, Barkin and King note a time lag between the irrigation system's construction and subsequent growth in agricultural output, attributing this gap to the "slow response of farmers and creditors to new opportunities created by the Commission's investments" (Barkin and King 1970:220). Most ejidatarios lacked the capital to both clear their land of vegetation and finance commercial cotton production. Lacking resources, land rental arrangements provided their only opportunity to open up their ejido plots to cultivation. The institutionalization of these arrangements retarded the commercial transformation.

Contracts, generally on an annual basis, stated that the financier covered the production costs of production, including seeds, water, and all chemical and labor inputs. The financier paid the producer, generally an ejidatario,

from 700-1000 pesos/hectare to use the parcel for one season. The financier was also obligated to employ the ejidatario as a day laborer on his own land, at a rate from 20-25 pesos/day (Barrett 1975b:82). Despite legal restrictions under the Law of Agrarian Reform, the Mexican government accepted and legalized ejido rentals, under the premise that the ejidatario, lacking the resources and experience to cultivate cotton himself, would be able to learn new technology and eventually move into cotton production. This premise was not founded, as contractual relations did not change over time. In the 1964/65 season, cotton production occupied 34,000 hectares in the ejidal sector, although Banjidal only financed 11,000 hectares. Official estimates limited ejido land rental to only 13,000 hectares, but other sources suggested that rented land comprised 20,000 hectares, or more than 50% of irrigated ejido land (Barrett 1975b:78). Others estimate that 65% of all cotton was planted on rented land, and 60% of ejido land was controlled by cotton gin owners (Fernandez, Gil, and Siquin 1986:114).

As private investors demonstrated cotton's commercial viability, the Mexican government began to distribute agricultural credit for cotton. The government's administration of agricultural credit mirrors later problems encountered in cantaloupe. The case of William Jenkins, a U.S. cotton entrepreneur, serves as an example. This

investor financed cotton production in the valley, on rented land, controlling all stages in the production and commercialization process. Jenkins directly financed work and credit ejidatario groups, who, in turn, managed their own finances and field operations.

In contrast, when the Bank assumed control of Jenkins' estate, it retained control of all financial operations. The Bank divided the property in parcels, organizing ejidatarios from various ranches into integrated credit societies to commercially produce cotton. In this manner, the Bank followed the example of the previously discussed collective ejido in neighboring Nueva Italia (Glantz 1974). Over time, the Bank intended that ejidatarios would use cotton profits to pay for the land, infrastructure, and credit for agricultural machinery (Barrett 1975b:53).

Yet, in assuming control, the government significantly changed the production and commercialization system, repeating the same mistakes of the earlier collective ejido. Local producers became economically dependent on the state for credit and inputs, losing any independent control over operations. The Bank continued working with the same producer groups, only now they were organized into "societies of rural production." Whereas Jenkins had financed 100% of production costs, the Bank distributed less per hectare. According to local producers, Bank managers and technicians were not concerned if financing did not

cover all production costs. Earlier, production had been emphasized; Jenkins' technical staff reports included details on actual technical field problems and production costs. The Bank was primarily interested in organizing credit societies to guarantee recuperation of its investment. Many producers responded by (1) investing less effort in production, and (2) siphoning off cash amounts during the cycle, with little hope of recuperating a profit at the end of the harvest (Ejidatarios, personal communication, 1988). This reflected producers' strategies in the face of declining world market prices and a hierarchial administrative structure.

At the regional level, the government established the Local Agricultural Association of Cotton Producers in the 1960s, in which the government assumed partial responsibility for financing, technical assistance, processing, marketing, and distribution of benefits. The association included most of the valley's cotton producers, covering 40,000 hectares in the 1960s. This associative form served as the regional example later used to organize specialized producers of fruit and horticultural crops, such as lime, banana, papaya, cantaloupe, and most recently, mango.

Cotton production faced greater problems throughout the 1960s. Critical factors were cotton's low world market price and high production costs, particularly for chemical

insecticide. In contrast with other cotton-producing states in northern Mexico, Apatzingán has no winter cold freeze, necessary to kill insects and break their life cycle. Over time, producers applied greater quantities of chemical insecticides. Also, Apatzingán producers have historically operated as individuals, tending to ignore bureaucratic regulations and edicts. The Ministry of Agriculture and the local cotton producer organization periodically issued regulations requiring producers to adopt better management practices, to plant in programmed sequences, and to destroy crop residue immediately after harvest. Apatzingán producers, with a healthy disrespect for authority, continued ignoring the regulations. Thus, in 1965, when Northern Mexican cotton producers only applied 6-7 aerial fumigations per crop cycle, Apatzingán producers sprayed an average of 20 applications per cycle (Barrett 1975b:117). Increased chemical use greatly increased production costs. In 1973, insect control represented only 29.6% of production costs, whereas by 1977, it comprised 50.6%. In real terms, costs of production/hectare more than doubled from 4824 pesos/hectare in 1965 to 10,783 pesos/hectare in 1977 (Durán Juárez and Bustin 1983:107). Despite increased chemical applications, or, perhaps, because of heavy chemical use, insect pest problems continued, reducing yields. Cotton yields decreased significantly, from 2,400 kilograms/hectare

in 1965, to 1665 kilograms/hectare in 1976, while costs increased (Durán Juárez and Bustin 1983:183).

Over time, world market prices in cotton fluctuated greatly. During the 1968/69 season, monthly price fluctuations hovered at 3.16%, whereas by 1972/73, they had increased to 22.7% (Durán Juárez and Bustin 1983:120). Both low and volatile prices combined with increased local production costs to eliminate cotton's profits in the valley of Apatzingán. As cotton declined in the 1970s, cantaloupe, originally a secondary export crop, assumed greater importance to the regional economy.

During the 1970s, confrontations erupted between cotton producers and those of other crops, particularly fruit crops. Excessive chemical use destroyed not only insect pests in cotton, but other insects as well, many which were beneficial. During the 1970s, cotton and lime producers repeatedly conflicted over cotton chemical insecticides that also killed the red spider, a beneficial insect which ate other insects harmful to lime production. In 1979, Tepalcatepec ejidatarios petitioned the Agricultural Directive Committee (CDA) to ban cotton near lime orchards. The Committee suspended planting in response to protests of small producers, only to later lift the ban, under pressure from commercial cotton growers (Epoca June 15, 1979). Lime producers complained that the Ministry of Agriculture worked

only for cotton growers and did not care about other producers in the valley.

Commercial Agriculture: Fruit and Horticultural Crops

With cotton's demise, other fruit and horticultural crops assumed greater economic importance. Cantaloupe was first introduced into the valley of Apatzingan during the 1941/42 season, but transport problems during World War II prevented its expansion. No major highway out of the valley existed, and buyers could not always obtain rail cars during wartime. Always destined for the U.S. market, cantaloupe production and export continued at a steady scale under cotton's shadow.

Cantaloupe production first concentrated in those ejidos closest to Apatzingán, facilitating transport to packing houses located near the railroad stations, either in Apatzingán or in Nueva Italia. During the early years, most cantaloupe exported to the United States was shipped to New York City where the fruit received the best price (Barrett 1975b:106). U.S. financiers rented large tracts of land and directly oversaw production. Even in the 1960s, much of the valley land remained in desert vegetation, and many ejidatarios entered into land rental agreements with U.S. financiers in order to clear their land (Abel García, personal communication, 1988).

In the earlier years, producers cultivated a wide range of horticultural crops, including chile, onion, cucumber,

and tomato. Under cotton's regional domination, only cantaloupe maintained production, specifically because of the buyers' access to the U.S. market. By 1970, there were 8 chemical supply stores in the municipality of Apatzingán, and between 50-75% of total production was shipped to the United States (Barrett 1975b:107). As today, the timing of Apatzingán's production was critical; the fruit had to arrive in the U.S. market before U.S. domestic production for spring, but not arrive before the eastern United States had finished its coldest months, essentially limiting export from the end of February to the end of April. Apatzingán's competitive edge in timing compensated for high shipping costs by refrigerated rail cars to the U.S. border.

Producers and buyers who worked during this period remember fewer technical and commercial problems. Production technology was less complicated; in chemical applications, producers recalled applying nothing more than methyl parathion, once every 12 days (Private producers, personal communication, 1988). In commercialization, the arrangements and contracts between producer and buyer were verbal, based on an understanding between the parties. However, only a small group of private commercial producers worked with the U.S. buyers; the majority of ejidatarios benefitted little from the crop. Only in the late 1960s, with government support, did small producers enter into cantaloupe production.

Conclusions

Important historical factors shaped the development of commercial agriculture and the region's experience in collective agriculture. The problems encountered historically continue to the present day. The inability of the state, local authorities, and producer organizations to resolve these problems undermines Apatzingán's performance capability in commercial agricultural production. The state could not effectively "organize" small producers for commercial agricultural production, when ejidatarios recognized that the organizational structure and administration provided them few returns. Producers' individual response in sabotaging organizations reflects their distrust of the bureaucracy and corruption within externally-imposed organizations.

Regional Isolation

Historically, the valley developed in physical isolation from the national economy. During the colonial and independence periods, a ranchero agricultural economy developed, due to the harsh, arid environment. Only the region around Nueva Italia and Lombardía entered into a commercial economy prior to the Mexican revolution. Despite post-revolution government investment and regional integration into a international agricultural economy, this ideology of the ranchero persists, fostered by local intermediaries or brokers. Despite increasing tensions over

local wealth and power differences, small farmers and ranchers of the valley of Apatzingán continued to view the outsider, be it the Mexican government or the foreign investor, with the greatest suspicion.

Lack of Collectivism

In introducing both the collective ejido in Nueva Italia and later cotton credit groups, the government tried to impose a newly formed "collective" identity, while at the same time, integrating these cooperative groups into a commercial enterprise. The idea of the "collective" remained a romanticism carried over from the Mexican Revolution, an ideology espoused by all, yet often failing to produce the tangible results necessary to legitimate and secure its operations as a commercial enterprise. Producers, although perhaps inexperienced in commercial operations, could see clearly that, as individuals, they gained little from cooperation and sharing.

Of definitive importance is the contradiction represented in the creation of an organization based in collectivism, inside a capitalist structure.

. . .the economic interaction of each individual of the collective with the elements of a system of private property and free enterprise made it impossible to conserve equality among the community members. This economic disequality, in contradiction to the theories of the enterprise, produced the inconformities and resentments that would sooner or later disintegrate the community nucleus.

These phenomena made the individual feel that the possibilities of personal development, promised by the capitalist system were impeded by being

integrated in a community that functioned as an island in society. This impression made the individual feel restrained and frustrated.

(Glantz 1974:130-131)

State Investment and Commercial Agriculture

State intervention and commercial agricultural promotion included two major objectives. One, the Mexican government proposed to increase commercial agricultural production, generating both a commercial product and foreign exchange. Second, the government, by extending adequate land and agricultural credit to the ejido sector, expressed its intent to guarantee small producers, particularly ejidatarios, access to the resources and benefits of commercial agriculture. Yet, in failing to restructure the existing community and regional power structure, the government could not guarantee ejidatarios access to resources.

Institutionalization of Brokers

The absence of a formal, legitimate authority to manage resource and benefit distribution encouraged the growth of local intermediaries, who both managed the system more efficiently and used their position for personal gain. As defined, the function of these caciques. . .

is to organize, centralize and maintain in good functioning condition "the disseminated fragments of power" that now are dispersed in our political organization. Through this centralized organization of political power, the cacique and his apparatus can satisfy the necessities of different community groups better than the legally

conceive and culturally approved social structures.

(Merton 1957:134)

Despite state intervention and land redistribution, the government failed to also introduce new legitimate and effective organizational mechanisms to redistribute control over both resources and management within the ejido structure. This vacuum allowed those, often the most capable ejidatarios, to move into positions of brokers between ejidatario groups and state authorities. As discussed in Chapter One, brokers occupy a conflictual position, in which they control access to limited resources. The limited nature of the resources encourages their "clients" to compete among themselves for access to resources and benefits. Within this structured context, the ejidatario responds passively, in informal ways, such that individual sabotaging and siphoning of inputs and resources eventually undermines productivity and the efficiency of a collective enterprise.

Economic Dependence on Single Crop and Market

From 1940-1970, the Mexican government invested heavily in infrastructural development, transforming the region into a major commercial agricultural system. Commercial agriculture's history of commercial agriculture in Apatzingán is characterized by complete economic dependence on a single crop, first cotton, and now cantaloupe, all sold

to a single market, the United States. This market structure contributed to a historic boom and bust pattern, as exemplified in cotton, which from a total high of 50,000 hectares, was obliterated by 1982, when the Ministry of Agriculture and Water Resources (SARH) banned the planting of any cotton in the valley. Many producers draw parallels between cotton and cantaloupe, foreseeing the day when cantaloupe, for the same organizational and external reasons as cotton, will no longer be grown in the valley of Apatzingán.

CHAPTER FOUR

THE AGRICULTURAL SYSTEM IN THE VALLEY OF APATZINGAN

Introduction

The valley of Apatzingán is situated in the state of Michoacán, in southwestern Mexico. The valley's hot, dry climate, long growing season, low level of cloud cover, and fertile river basin soils provide an excellent physical environment for crop production; water is the major constraint. As discussed in Chapter Three, the Mexican government targeted specific regions through policy and programs to promote national economic development. Also, as a commercial agricultural economy, market structure and conditions influenced the development of specific crops. Over time, government policy and the commercial market established the context within which Apatzingán's commercial agricultural system evolved. These external conditions influence the opportunities and potential gains for small producers entering into commercial agricultural production.

The agricultural system is comprised of three major categories of crops: (1) traditional food crops, comprised of maize and beans, (2) commercial crops, such as cotton, rice, sorghum, and sesame, and (3) fruit and horticultural

crops, represented by cantaloupe, lime, mango, banana, and cucumber. Other regional tropical fruits include coconut, ciruela, black and white sapote, mamey, guayaba, papaya, and tamarind. This chapter presents the production and commercialization of these three major crop categories, including the opportunities and constraints faced by small producer, particularly ejidatarios.

Mexican Agricultural Development

In Mexico, agricultural and forestry product exports declined between 1972-1981, from 67% to 30.4% of total agricultural exports, indicating to some scholars a "crisis" in the agricultural sector (Goodman, Sanderson, Shwedel, and Heber 1985:3). In contrast to other sub-sectors within Mexican agriculture, horticultural crops exhibit a positive annual growth rate (for cantaloupe, see Table 4.1 and Figure 4.1). Between 1971-1984, horticultural production expanded 4.5% in area cultivated and 6.5% in total volume produced; most importantly, the value of all horticultural crops increased 21%, in contrast with a generally stagnant agricultural sector. The majority of horticultural products are exported as fresh produce (86%), with only 4% processed for export, and 10% for national consumption (SARH 1985).

The Mexican government encouraged export crop production in an effort to earn foreign exchange and promote agricultural industries in rural Mexico. In horticultural crops, the government targeted the states of Sinaloa, Baja

California Norte, Michoacán, Sonora, and Guanajuato, which combined produce 81.9% of horticultural exports. The seasonality of Mexican fresh fruit and vegetable production is critical to market expansion. In Sinaloa, Michoacán, Sonora, and Guanajuato, fresh fruits and vegetables enter the United States market at a time of the year when U.S. domestic production is limited to Florida (Chapter Six examines the commercialization side of the system).

In encouraging commercial agriculture, the Mexican government concentrated infrastructural development, financial support, and benefits in the regions identified above. At the national level, this policy has increasingly concentrated resources and income.

Within the agricultural sector, income is highly concentrated. Large commercial crop and livestock enterprises earn much higher incomes than do smaller farmers in rain-fed areas. Norton reported that rain-fed areas as a whole accounted for 76.9% of farms in 1968, but only 11.3% of farm income.

(Goodman, Sanderson, Shwedel and Haber 1983:2)

Commercial opportunities thus structure regional agricultural systems, reflecting the mix of public/private investment, the types of producers, market opportunities, government policy and investment, and last, but not least, the bio-physical environment. The local level impacts of national policy decisions can be seen in the agricultural economy of the valley of Apatzingán.

Table 4.1. Mexican Cantaloupe Production, 1925-1985.

	Production		Yields	Price*	Value*
	Total (tons)	Export (tons)	(tons/ha.)	(\$/ton)	(1000\$)
1925	6994	0	2.9	0	0
1930	6772	981	3.2	31.4	245
1935	12462	926	3.8	18.6	233
1940	18119	4	4.5	19.3	349
1945	15455	443	4.0	60.7	936
1950	22272	3570	4.9	43.1	961
1955	47409	20295	5.1	34.4	1630
1960	80728	45692	5.2	42.2	3408
1965	261078	70835	14.6	50.6	1320
1970	163115	79083	9.8	53.9	8777
1975	170525	73912	12.4	119.8	20433
1980	319952	102502	11.8	174.0	55679

*Values expressed in U.S. dollars, based on Mexican peso exchange rate in Appendix G.

Source: SARH/DGEA 1983:43-44.

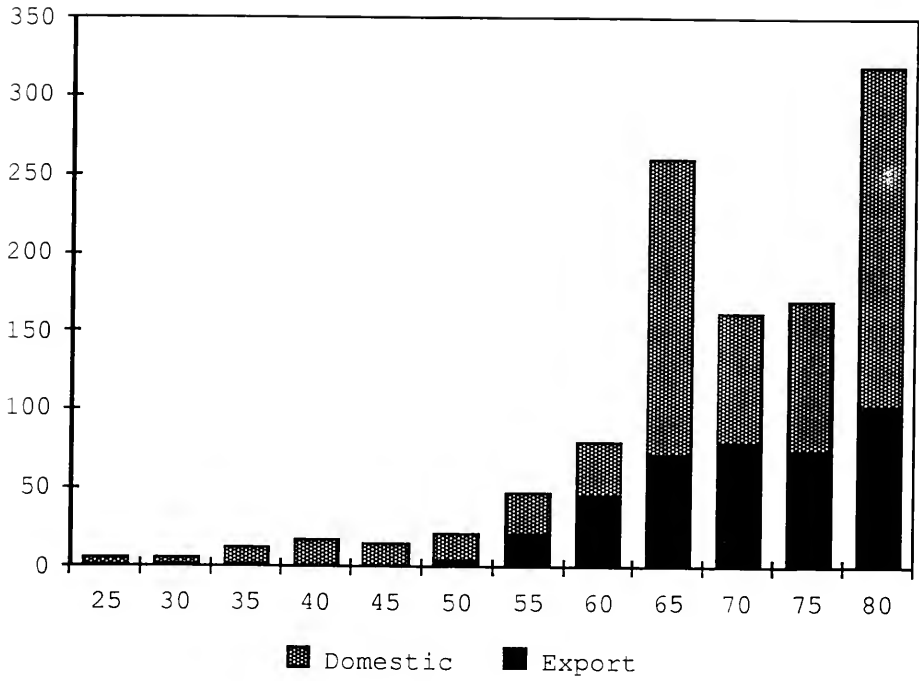


Figure 4.1. Mexican Cantaloupe Production, 1925-1985.

Source: SARH/DGEA 1983:43-44.

Bio-physical Environment

The valley of Apatzingán is an east-west valley formed by the Rio Tepalcatepec, 75-115 kilometers wide and 120 kilometers long. The valley, at 300-400 meters above sea level, is enclosed by the Sierra Madre del Sur to the southeast, separating the valley from the western coast, and the Sierra de Tancitaro, the western edge of Mexico's central plateau to the east, rising to a maximum height of 3,860 meters. The southern edge of the Sierra de Tancitaro includes a chain of extinct volcano cones, and some active cones, such as the Volcán de Parícutín. From Uruapan, the nearest major city on the edge of the Michoacán meseta, the altitude drops from 1500 meters down to 400 meters; the change in topography, climate, and ecology is dramatic.

The Rio Tepalcatepec flows northwest to southeast, fed by small streams, and joins the Rio Balsas before flowing into the Pacific. The Rio Chila, on the south side of the Rio Tepalcatepec, is the only other perennial stream, before the Rio Tepalcatepec meets the Rio de Marqués and Rio Balsas (see Figure 4.2). A few springs are also found, at Apatzingán, and to the west, at Chandio and Pinzándaro, but, in general, the valley is dry and arid.

The natural vegetation includes stretches of grassland in the areas of Buenavista and Tepalcatepec, but other areas are dominated by desert vegetation. The characteristic vegetation is mesquite, huisache (Acacia sp.), and a wide

range of cacti. Much of the valley is naturally better suited for cattle grazing than agriculture. Prior to irrigation, agricultural producers were only able to grow rainfed maize during the rainy season in some parts of the valley. The Commission of the Rio Tepalcatepec and later Rio Balsas Commission (discussed in Chapter Three) targeted the entire river basin in the irrigation, road, infrastructural, and social development programs from 1950-1970, transforming the regional agricultural system.

The valley of Apatzingán, situated in the northeastern side of coastal mountain range, falls into the western range's rain shadow, and these mountain ranges prevent the passage of humid air. Even during the rainy season, from June to October, there are still 18-20 days/month of complete sun, with an low average annual precipitation of 700 mm. Across the four major municipalities in the valley, Apatzingán, Nueva Italia, Tepalcatepec, and La Huacana, even during the rainy season, precipitation never exceeds 150 mm./month. In Apatzingán, situated in the center of the valley, Figure 4.3 shows monthly precipitation data.

The low level of precipitation makes ideal growing conditions for horticultural crops under irrigated conditions. Still, the rainfall data in Figure 4.3 indicate a slight blip in January. In the history of cantaloupe

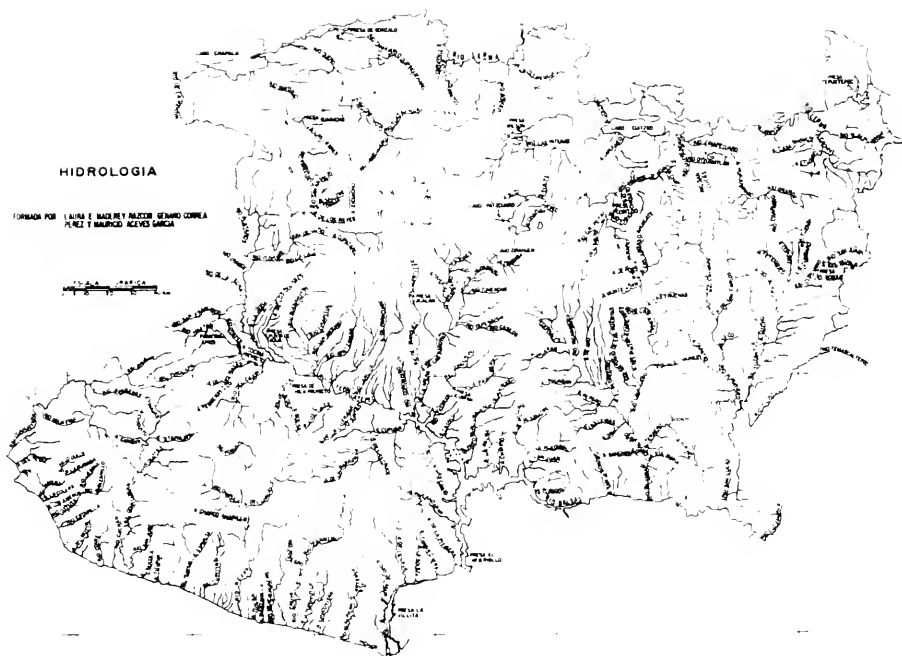


Figure 4.2. Hydrology of the Rio Tepalcatepec, Valley of Apatzingán

Source: SARH/CGDA 1982a.

production in the valley (1960-1988), the end of January and first week of February occasionally have rainfall and/or extensive cloud cover. Cantaloupe producers are concerned about this period, since rainfall can cause great damage, depending on the plant's growth stage.

Temperatures do not fluctuate greatly, averaging around 28 degrees centigrade. The coolest months are December-January when it may drop as low as 25 degrees centigrade. This period coincides with the first planting stages in cantaloupe. Producers are concerned that the cold, particularly in the evenings and early mornings, retards early plant growth and allows the soil to hold moisture, thus increasing risks to the crop from fungal diseases.

Regional soils are of volcanic origin, with two soil types predominating. A light brown, fertile soil predominates in the floodplain of the Rio Tepalcatepec, comprising 11% of the soils. The pradera, a savannah type soil, is a black, heavier textured soil with a higher clay content, situated between the floodplain and the sloping uplands of the central plateau (Correa Perez 1974:311-316). The floodplain soil is the most fertile, from the periodic flooding, as well as having better drainage. SARH technicians have expressed concern about increasing soil salinity in this region, after years of irrigation, but little data exist to confirm or disprove their suspicions (Sánchez Salgado 1979c).

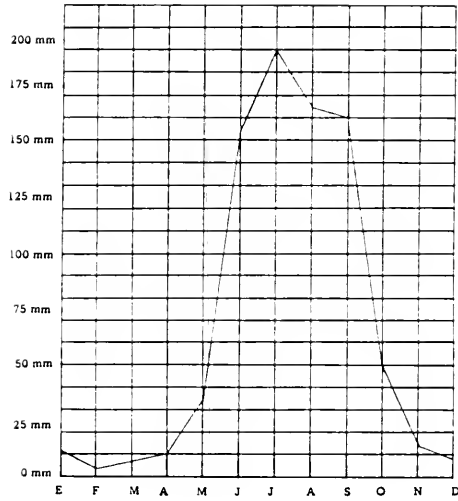


Figure 4.3. Monthly Rainfall Precipitation, Apatzingán

Source: Correa Perez 1974:286.

In the pradera soils, used historically in pasture, the greatest problem is soil compaction in the years since the irrigation system has opened these soils up for cultivation. The higher clay content slows efficient water drainage and root development. For cantaloupe producers, production in these areas risks a higher incidence of fungal diseases and fruit rot from retention of soil moisture.

The Irrigation System

There have been three major stages in the irrigation development of the valley of Apatzingán. Initially, on April 12, 1938, the Irrigation District of the Tierra Caliente was established, irrigating around 6700 hectares. Three irrigation systems were then constructed in the areas of Buenavista, Apatzingán, and Parácuaro, with dams built on the Ríos Buenavista and Cancita, expanding the irrigated cropland to 10,250 hectares. In the second stage, under the jurisdiction of the new Irrigation District of the Río Tepalcatepec, the district constructed a dam on the Río Tepalcatepec, improved drainage in many areas, and erected deep wells for pump irrigation, expanding the total area irrigated to 63,000 hectares (Barajas 1979b:49). This period also corresponded to the integrated rural development programs of the Tepalcatepec Commission, discussed in Chapter Three. These programs continued throughout the third stage of irrigation construction, under the Río Balsas

Commission, during which time, irrigated area expanded to a total of 96,000 hectares.

During this period, SARH established the Irrigation District Cupatitzio-Tepalcatepec, headquartered in the municipality of Apatzingán, covering the municipalities of Lombardía, Nueva Italia, and La Huacana. Currently, the Irrigation District covers the same area, but the Ministry of Agriculture and Water Resources (SARH) renamed the system as the Irrigation District No. 107. Irrigation is concentrated in these municipalities in the floodplain of the Rio Tepalcatepec: Tepalcatepec, Nueva Italia, Buenavista, Apatzingán, and Lombardía (see Figure 4.4).

Producers in irrigated areas, around 50% of the region's cultivable area, can grow two crops per year, usually a grain crop during the rainy season and a commercial crop during the dry season. Ejidatarios represent 8906 producers (88% of all producers) within the irrigation district, controlling 73192 hectares (76% of total irrigated area) (Barajas 1979c:54). This study of small commercial agricultural producers thus focuses on a special, select group of ejidatarios, those with access to irrigation. As will be discussed (see Tables 4.6 and 4.7), only those ejidatarios with irrigation can produce commercial crops. The ejidatarios on the remaining 50% of the cultivable land must rely on the rainy season to grow basic grain crops (see Table 4.7). In non-irrigated areas,

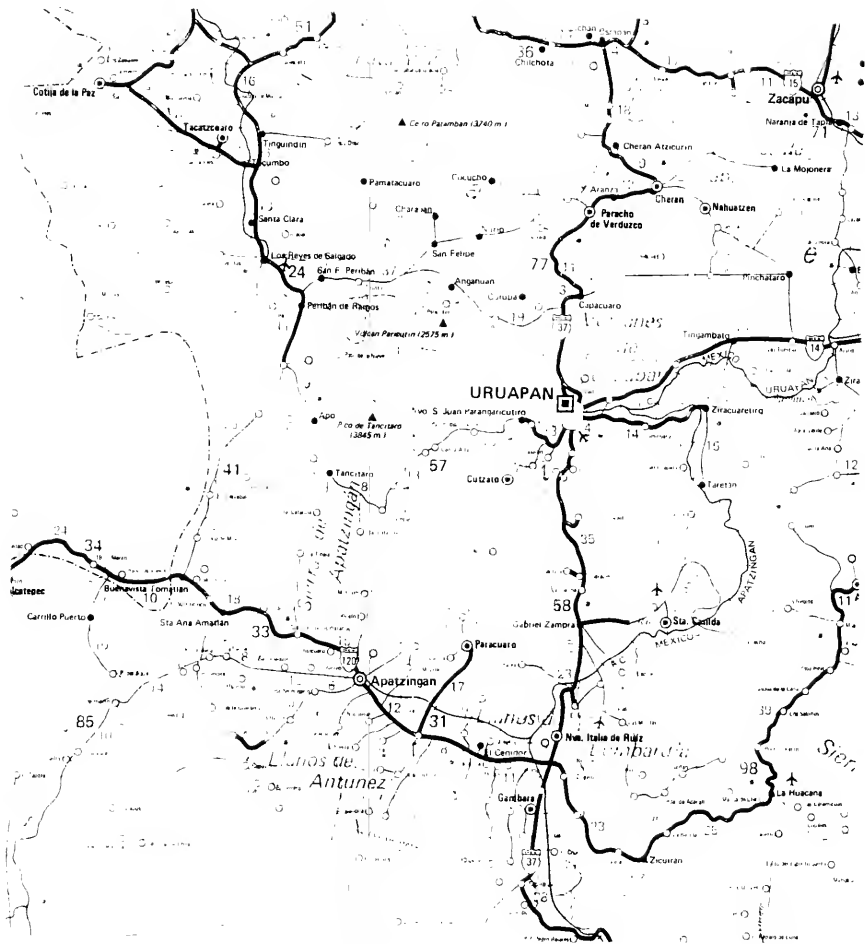


Figure 4.4. Map of the Valley of Apatzingán, Including Major Municipalities.

including the south side of the Rio Tepalcatepec and the area around Zicuirán and La Huacana, producers only grow one crop, usually a grain crop, during the rainy season.

SARH is responsible for programming all irrigated agricultural crops in the valley of Apatzingán. The Agricultural Directive Committee (CDA), composed of representatives from the various Ministries, sets the actual program, based on producers' solicitations, government estimates of storage capacity, and mandates from the Ministry at the national level. Under the Federal Law of Irrigation, SARH intervenes in the event of water scarcity to distribute reduced amounts equitably among private producers and ejidatarios. The Ministry also reserves the right to suspend user rights or services to producers who do not efficiently manage water allotted to them.

Agricultural Industries and Technical Assistance

In promoting commercial agricultural development, the government encouraged public and private financing of agricultural processing plants and industries. Still, the valley continues to produce primarily agricultural products to export. Table 4.2 shows the number of processing plants and distribution of agricultural value earned for the major commercial crops in the valley of Apatzingán. This data, while showing some regional diversity, indicates a general regional dependence on cantaloupe production for the U.S. export market. In 1980, the SARH banned the planting of

cotton in the valley of Apatzingán, and currently, none of the cotton gins listed are now functional or used for other purposes. In 1978, there were only 18 packing houses for cantaloupe; in the 1987/88 season, there were 45 packing houses. Additionally, the data in Table 4.2 suggest a relatively low level of investment in post-harvest processing and storage. In the case of cantaloupe, many packing houses consist basically of a cement floor, tin roof, and washing and grading conveyors. The U.S. buyers, financing production and commercialization, keep their capital mobile and do not invest in fixed capital improvements in the valley. Most of the producer organizations, proprietors of the packing houses, liquidate at the end of the season, and do not reinvest group profits in machinery and processing.

The valley of Apatzingán has received extensive government investment in agricultural research and extension. The National Institute of Agricultural Investigation (INIA), the research branch of the Ministry of Agriculture and Hydraulic Resources, established the Agricultural Experimental Station of the Valley of Apatzingán (CAEVA) in 1953, one of only eleven such stations in Mexico (SARH/INIA/CAEVA 1983). Each of these centers is situated in a different agroecological zone, in order to develop technical recommendations specific to certain agroecological zones. CAEVA's research and extension area

Table 4.2. Agricultural Industries in the Valley of Apatzingán, 1979.

Product	No. of Plants	No. of Workers	Commercial Value (1000 U.S.\$)	
Cantaloupe	18	1026	13,430	(45%)*
Cucumber	4	284	1,940	(6%)
Cotton	5	650	7,375	(25%)
Rice	4	96	268	(.9%)
Sugar Cane	13	297	249	(.8%)
Sorghum	1	111	852	(2%)
Lime	12	296	5,314	(18%)
Total			29,428	(100%)

* Represents percentage of total commercial value in the Valley of Apatzingán.

Source: Barajas 1979b:51.

of influence comprises the river basin of the Rio Tepalcatepec, including the seven major municipalities in the valley. The research at this station is targeted towards the specific crops and technical problems of this region to improve agricultural production. Agricultural research concentrates on cotton (until 1982), cantaloupe, maize, sorghum, sesame, soybean, and perennial fruit crops.

All of these factors, the irrigation system, the presence of agricultural industries, and the heavy government investment in infrastructural development, distinguish the valley of Apatzingán from other land reform regions in Mexico. The state's investments in the agricultural system have structurally transformed the region's agricultural economy. Further examination of the agricultural system points out the trends and limitations of commercial agriculture in the valley of Apatzingán. Small producers, although having access to irrigation, face other constraints which limit their participation and gains from commercial agriculture.

The Agricultural System

In the valley of Apatzingán, there is a total of 205,900 cultivable hectares. Of this, temporal land comprises 100,000 hectares, irrigated land comprises 70,700 hectares, and pump irrigated land covers 25,350 hectares. The remaining 9,850 hectares is not cultivable, most of it remaining in desert vegetation, and left for cattle grazing.

The irrigation expansion transformed the agricultural economy. From 1950-1965, the cultivable area in the valley expanded from 42,000 to 205,000 hectares. Commercial agricultural crops competed with maize and dominated the agricultural sector. Also, from 1950-1965, commercial agricultural production in cotton, lime, cantaloupe and watermelon expanded from 8% of cultivated area to 56% of cultivated area (Fernández, Gil and Siquin 1986:111). Irrigation is one of the most critical factors affecting small farmer participation in commercial agriculture. The valley of Apatzingán is distinct from other Mexican commercial agriculture regions in the large percentage of ejidatario producers on irrigated land.

Agricultural Producers

Private producers, representing only 12.4% of local producers, control a total of 22,407 hectares, 24% of total irrigated area (see Table 4.3). In comparison with many other commercial agricultural regions in Mexico, this indicates proportionally less private control over irrigated land. A small group of private producers still control larger land units, but the government has been relatively successful in breaking up large landholdings, primarily ranches, and redistributing land.

Table 4.3. Land Tenure in the Irrigated District, Valley of Apatzingán.

<u>Ejidatarios</u>				Private Producer		
Hectares	Users	Hectares	Ave.*	Users	Hectares	Ave.*
0.1-5	1190	3491	2.93	503	1935	3.85
5.1-10	7716	69701	9.03	213	1673	7.85
10.1-20				130	2397	18.44
20.1-50				337	11603	34.43
>50				82	4799	58.52
Total	8906	73192	8.22	1265	22407	17.71

* Represents the average for each category of producer.

Source: Barajas 1979c:54.

Ejidatarios comprise 87.6% of farmers in the valley of Apatzingán, dominating production in basic food and grain crops, maize, sesame, sorghum, and beans, that is, crops with the lowest economic returns. Ejidatarios fall into three categories: (1) rainfed, or non-irrigated production, (2) producers in partially irrigated areas, and (3) irrigated producers. Rainfed producers are at the greatest disadvantage, as discussed above.

As shown in Table 4.3, ejidatarios comprise 8906 producers within the irrigated district, controlling an average of 8.22 hectares each. Private producers still farm a larger average land size, 17.71 hectares each, but they manage a smaller percentage of the total irrigated hectares. In contrast to other areas in Mexico and their fellow rainfed producers, this subsector of Apatzingán ejidatarios have benefitted from irrigation, land redistribution, and access to credit. Ejidatarios in the irrigated sector control most of the agricultural credit to the ejido sector and the membership in regional ejido organizations. Access to commercial agriculture and its projected benefits are limited to this select group of ejidatarios.

Agricultural Crops

The agricultural system in the valley of Apatzingán includes three major categories: (1) traditional food crops, comprised of maize and beans, (2) commercial crops, such as cotton, rice, sorghum, and sesame, and (3) fruit and

horticultural crops, dominated by lime, mango, banana, cucumber, cantaloupe, and other tropical fruits. The subsistence and grain crops are generally grown during the rainy season, under both rainfed and irrigated conditions. In commercial agriculture, both grain and fruit crops are grown in irrigated parcels.

Figure 4.5 depicts the agricultural calendar for the valley of Apatzingán, including planting and harvesting dates for agricultural crops for both dry and rainy seasons. As shown, the dry season crops, most planted commercially, do not directly compete with rainy season crops, dominated by basic grains. These commercial crops can be grown only in the irrigated district during the rainy season, by those ejidatarios who have irrigated parcels. Commercial fruit trees, depicted at the bottom of Figure 4.5, are perennials and require the producer to set aside parcels permanently (although there is some intercropping when the trees are young). These trees also required irrigation.

Traditional Subsistence Crops

Maize

Maize covers more area than any crop, about 28,000 hectares annually, most planted during the rainy season (see Table 4.4). There are an estimated 2600 maize producers, with an average of 6 hectares each, under rainfed conditions and another 1500 producers, with 8 hectares each, under partial or full irrigation (SARH/INIA/CAEVA 1983:148).

Crops	Months											
	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec
<u>Dry season (irrigated)</u>												
rice	//					*****					////////	
chile				*****								////
beans	///			*****								////
maize	///			*****								////
cantaloupe	//	*****										////////
cucumber	//	*****										////////
watermelon	//	*****										////////
sorghum(g)	//				*****							////////
sorghum(e)	//				*****							////////
sorghum(f)	//			*****								////////
<u>Rainy season (irrigated and non-irrigated)</u>												
sesame						////////						*****
rice					////////							*****
maize						////						*****
sorghum(g)						////						*****
sorghum(f)						////						*****
cotton**						////						*****
<u>Perennials (irrigated)</u>												
mango*				*****								
tamarind*				*****								
lime*				*****								
banana**											*****	
papaya**												

/////=planting dates
 *****=harvesting dates

Figure 4.5. Agricultural Calendar, Valley of Apatzingán

*For mango, tamarind, and lime, these dates correspond to the major harvest periods. Smaller harvests also occur in the fall.

**For banana and papaya, harvests occur throughout the entire annual cycle. In banana, harvests occur every 20-25 days, except from November to January, when yields decrease, and producers cut only once a month.

***Cotton is no longer planted in the valley. In 1982, the Ministry of Agriculture and Hydraulic Resources suspended all planting permits for the crop.

Source: Agricultural technicians, Ministry of Agriculture, District of Rural Development 086, Apatzingán, Michoacán.

Table 4.4. General Characteristics of Major Agricultural Crops, Valley of Apatzingán.

Crop (season)	Water source	Total Has.	Total Prod. (tons)	Yields (tons/ha.)
Traditional				
Maize (rainy)	rainfed	16000	27000	1.7
	irrig.	10000	22000	2.2
(dry)	irrig.	2000	5000	2.5
Beans (dry)	irrig.	1350	1485	1.1
Commercial				
Rice (rainy)	irrig.	6387	31985	5.0
Sorghum (rainy)	rainfed	15000	37000	2.5
(dry)	irrig.	14000	70000	5.0
Sesame (rainy)	rainfed	1146*	916*	.8
Cotton (rainy)	irrig.	11245	23614	2.1
Fruit				
Lime (year)	irrig.	14996	127000	7.2
Mango (year)	irrig.	6000	50000	8.3
Banana (year)	irrig.	3600	136080	37.8
Cucumber (dry)	irrig.			
Cantaloupe (dry)	irrig.	5000	40000	8.0

*Source: Statistics Department, SARH, Apatzingán, Michoacán
Source: SARH/INIFAP/CAEVA 1983.

In general, producers grow either intermediate (60-120 days to maturity) or late maturing (65-130 days to maturity). Apatzingán producers grow improved varieties, not the traditional maize varieties more common in the highlands of Michoacán. Water, even during the rainy season, is a limiting factor, and many producers opt for earlier maturing varieties, despite lower yields, in order to harvest before the more arid months at the end of the rainy season (see Figure 4.5).

Maize is generally ready to harvest at 125-130 days after plant emergence. The maize is left on the cob to dry for about a week, reducing the grain moisture content to 14% humidity. Small farmers, ejidatarios, can sell their harvest to either CONASUPO, a national crop marketing agency, or to private middlemen, while private producers usually sell to middlemen. Ejidatarios will sell part of their harvest, retaining a percentage for household consumption and for seed, if they do not receive bank credit to plant maize. Producers prefer selling to local buyers, despite a slightly lower price, because the private buyers pay cash at time of sale. CONASUPO, entailed in the bureaucracy of a government institution, often will not actually reimburse the producer for several months after the harvest.

In Apatzingán, in the past 20 years, maize production has declined dramatically, in part reflecting the low

government support price for maize, under which maize production is no longer profitable (see Table 4.5 and Figure 4.6). Most ejidatarios continue to grow maize during the rainy season as a food crop; whether they plant the entire parcel to maize or sorghum may depend on the quantity and type of bank credit they can secure.

Dry Beans

Dry bean production occupies eighth place in area planted in the valley of Apatzingán. Total hectareage varies around 1350 hectares, all planted under irrigation during the dry season. Yields are low, an average 1.1 tons/hectare, producing total yields of around 1485 tons (see Table 4.4). Three local varieties are most common: (1) Delicias, (2) Flor de Mayo, (3) Jamapa. These varieties differ primarily in the length of the growing cycle, ranging from 70-90 days to harvest. Since the valley of Apatzingán is in the lowland sub-tropics, SARH extension agents recommend inoculating the bean seeds before planting. The high temperatures can quickly destroy the inoculant, and various measures are recommended to protect the inoculant material (SARH/INIA/CAEVA 1983:114). For these reasons, dry beans are not a crop easily adapted to the valley, nor accessible to poorer small farmers producing in the rainfed areas of the valley. Beans are consumed locally and production does not usually satisfy demand.

Table 4.5. Total Grain Crop Production, Valley of Apatzingán, Dry Seasons, 1970-1988.

	Maize	Sesame	Sorgh(g)*	Sorgh(e)**	Rice
1971	14845	3892	4666	2113	6839
1972	10692	1192	15526	2051	6147
1973	6857	615	11719	11636	3815
1974	13456	1911	10504	12739	4829
1975	15650	2002	24280	22536	9884
1976	15053	245	17636	24992	9212
1977	11725	102	11382	28648	7440
1978	10933	195	9187	22116	6974
1979	5462	245	4186	32548	6813
1980	8855	102	6980	12444	8002
1981	17655	18	10381	23200	8430
1982	8345	5	2594	13739	10027
1983	5108	0	4455	14482	4587
1984	4468	6	1099	20686	5268
1985	4474	0	2818	8612	770
1986	6371	0	6333	21893	6260
1987	4541	0	5936	7222	5299
1988	4836	0	3322	8873	3870

*Sorghum produced for grain.

**Sorghum produced for forage.

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

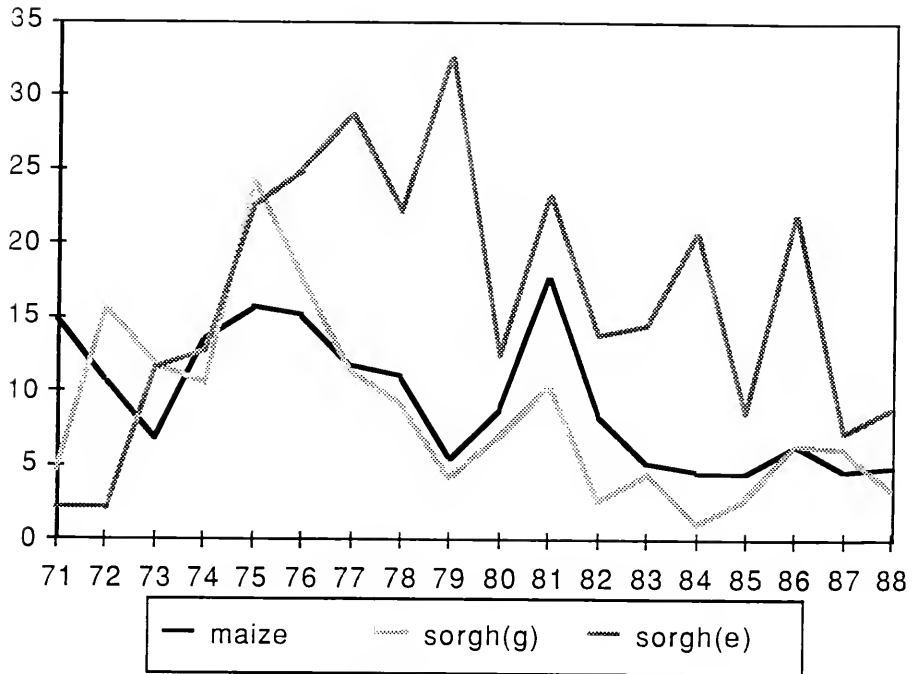


Figure 4.6. Total Grain Crop Production, Valley of Apatzingán, Dry Seasons, 1970-1988.

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

Commercial Crops

In commercial agricultural production, ejidatarios dominate the production of seasonal, agronomic crops, for which they receive agricultural credit from the National Bank of Rural Credit (see Table 4.6). These figures contrast sharply with commercial fruit production, such as lime and mango, in which private producers dominate. In agronomic crops, particularly maize and sorghum, the economic returns per unit area are lower than commercial fruit crops. For this reason, many ejidatarios would not grow these same agronomic crops without agricultural credit. Producers have come to view credit as a means to guarantee some production, as well as a household income source during the planting season. Often producers will divert a percentage of the credit towards household consumption needs during the crop cycle, recognizing that they will net less income at the harvest.

Rice

As described in Chapter Three, rice was first introduced into the valley by Italian immigrants. To this day, rice production is limited to around 6,000 hectares in the municipalities of Lombardia and Parácuaro, under the same irrigation systems originally constructed by the Cusi family in the 1900s. In the valley of Apatzingán, in 1981, 6,387 hectares of rice were planted, producing yields of around 5 tons/hectare, consistently the highest yields in

Table 4.6. Commercial Production by Land Tenure Status, Valley of Apatzingán, 1987/88 Dry Season.

Crop	Private Producers		<u>Ejidatarios</u>	
	Hectares	% Total	Hectares	% Total
Rice	44	6%	646	94%
Sweet potato	0	0%	208	100%
Beans	4	0%	1221	100%
Tomato	3	1%	208	99%
Maize	41	2%	1860	98%
Cantaloupe	271	9%	2722	91%
Cucumber	69	3%	1904	97%
Watermelon	12	2%	446	98%
Sorghum (grain)	103	9%	992	91%
Sorghum (broom)	379	16%	2001	84%
Sorghum (forrage)	31	23%	105	77%
Other crops	0	0%	69	100%
Total	962		11437	
No. Producers (% total)	1265	12.4%	8906	87.6%

Source: Department of Statistics, Ministry of Agriculture and Water Resources (SARH), Apatzingán, Michoacán.

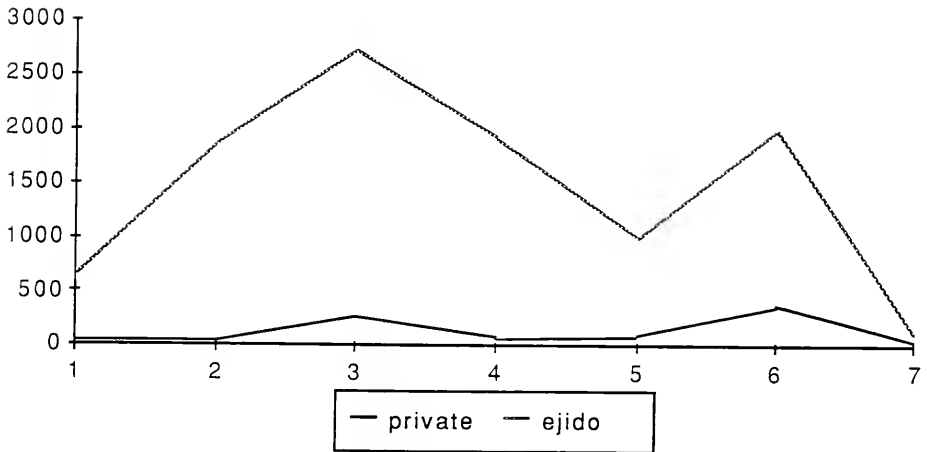


Figure 4.7. Commercial Production by Land Tenure Status, Valley of Apatzingán, Dry Season, 1987/88.

1 = rice 2 = maize 3 = cantaloupe
 4 = cucumber 5 = sorghum (grain) 6 = sorghum (broom)
 7 = sorghum (forage)

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

Mexico (see Table 4.4). The two most common varieties planted are Criollo de Colima, a locally adapted, high stature variety, and Milagro Filipino, the "Philippine miracle," a short statured, high yielding variety. All rice is planted first in seedbeds, then transplanted at 25-30 days. In the rainy season, rice is planted during May-June, to be transplanted from June-July. For the dry season, rice is planted in October-November, to transplant in November-December (see Figure 4.5). Rice production requires heavy irrigation and greater amounts of skilled hand labor than other commercial grain crops.

Sorghum

Sorghum, a recent introduction to the valley of Apatzingán, spread rapidly due to the crop's drought tolerance, mechanization, agricultural credit, and ease of commercialization. Annually, producers plant a total of 29,000 hectares in the valley, both during the rainy and dry seasons (see Table 4.4), with higher yields during the dry season under irrigation. Local producers plant either an late maturing variety (100 days to harvest) or an intermediate (90 days to harvest), technicians recommend planting before July 15 (late maturing) to July 30 (intermediate), for rainfed production during the rainy season, and December 15-February 10 for irrigated sorghum planted during the dry season. Sorghum is ready to harvest around 90-100 days after plant emergence, when the grain

contains 15-17% humidity, that is, when the grains are completely hard. Additionally, as shown in Table 4.4 and 4.5, sorghum is also produced for forage, primarily for the local livestock consumption. During the rainy season, under rainfed conditions, sorghum will yield 55-60 tons of green forage per hectare and 13-16 tons of dry forage per hectare.

During the 1970s, sorghum expanded rapidly in the irrigated areas of the valley of Apatzingán, reaching the highest production level in 1975 (see Table 4.5). Since then, particularly after 1981, sorghum has declined, partly reflecting low government support prices (see Figure 4.6). During the rainy season, under rainfed conditions, small producers continue to plant sorghum, only if they receive agricultural credit to plant. Although private producers only comprise 12.4% of total producers, they occupy 16% and 23% of land area in sorghum for forage (see Table 4.6). The economic return/unit area is low, and sorghum is a viable commercial grain crop only if planted in large quantities. Private producers can afford to rent land, generally from ejidatarios, and plant larger expanses. Thus, the official statistics probably underestimate private producers' activity in sorghum production.

Sesame

In the valley of Apatzingán, producers grow around 1100 hectares of sesame, primarily under rainfed conditions during the rainy season (see Table 4.4). Regional yields

are very low, averaging only 200-800 kilos/hectares (SARH/INIA/CAEVA 1983:16).

Sesame is harvested when the leaves turn yellow, and the primary capsules begin to open. Depending on the variety chosen, sesame has 85-100 days to harvest, with the later maturing varieties producing the higher yields. In harvesting, the laborer make "hands" of 15-18 centimeters in diameter, leaving the sesame to dry for about 10-15 days, in order to reduce the moisture content in the grain before threshing.

The major constraints to expanding sesame production are yields, labor, and climatic factors. Sesame, although commanding a high commercial price/kilo in the market, produces low and variable yields under rainfed conditions. The sesame seed, highly valued by the oil processing industry, contains 45-50% oil. Because of the low yields, producers do not view sesame as a lucrative endeavor. Secondly, sesame, particularly in harvest, requires careful hand labor, in order to prevent the exposed grains from scattering on the ground. Small producers, primarily ejidatarios, those with large families, can utilize unpaid family labor in cultivation and harvesting, thus reducing costs and increasing returns. Producers do not hire labor to work in sesame, since the low returns do not compensate the cost of hired labor. Finally, sesame must be left to dry two weeks before the grains can be threshed. Sesame is

harvested at the end of the rainy season, but unexpected rains during this two week period can destroy an entire season's crop overnight. As a result, total sesame production has declined steadily in the past 20 years (see Table 4.5 and Figure 4.6), such that sesame is only planted by small producers during the rainy season.

Cotton

Cotton, as described in Chapter Three, transformed the agricultural economy of the valley of Apatzingán. Until 1980, it dominated the commercial agriculture of the region. In 1982, the Ministry of Agriculture and Water Resources (SARH) suspended all permits to plant cotton, noting that increased production costs, decreased yields, and fluctuations in world market price prevented the crop from being profitable in the region. SARH's policy is to let the region rest; there are periodic efforts to try out new varieties, but producers generally believe that cotton has left the region forever.

Cotton was generally planted between June 10-30. The crop cycle coincided with the rainy season, but the producer could not depend on rainfall, and cotton was only planted in irrigated areas. Insect pest control eventually was the input which eliminated profits; local producers estimated that, by the end, most producers sprayed an average of 22 times during the crop cycle.

At 145 days after plant emergence, cotton is generally ready to harvest. The second picking occurred five weeks after the first. Due to the staggering of planting stages, harvesting occurred from the end of October through December. The cotton harvest provided agricultural labor unlike any other commercial crop in the region's history, drawing on migrant labor from the highlands of Michoacán, Guerrero, and Jalisco. Producers and locals remember the town plaza and neighboring portales, filled each night, with the camps of migrant workers.

Commercial Fruit Crops

Commercial fruit crops have expanded dramatically in the irrigated areas of the valley (see Table 4.7). As of 1986, fruit crops dominated 42.9% of the irrigated area in the valley of Apatzingán, including primarily lime, mango, and banana. In contrast to grain crops, private producers have dominated production of commercial fruit crops. Despite efforts by the Regional Union to secure credit for ejidatario producers in mango production, these crops remain dominated by the private sector.

Ejidatarios, with small land units, cannot afford to tie up the entire land unit in a perennial fruit crop. Horticultural crops, in contrast, offer small producers the opportunity to produce a commercial crop under irrigation during the dry season, yet continue to produce grain staple crops during the rainy season. Table 4.7 depicts the

contrast between commercial fruit and basic grain production in the valley of Apatzingán. In the irrigated areas, fruit production occupies more land than basic grains, which concentrated more in the rainfed areas. In comparing trends in both sectors over time (compare Figure 4.6 with Figures 4.7 and 4.8), the most dynamic growth has been in perennial fruits, which over the past 10 year, particularly in lime trees, has grown to occupy almost 50% of the irrigated zone in the valley.

Lime

Lime production has expanded more rapidly than any other commercial fruit in the valley (see Table 4.8 and Figure 4.8). Private producers are more active in lime production, controlling 25% of the area in orchards. Private producers, having the capital that ejidatarios lack are able to invest in fruit crops with higher return.

The Mexican lime, Citrus aurantifolia (Swingle) is an acid lime. In the valley of Apatzingán, there is 14,996 hectares in orchards, yielding a total production of around 127,000 tons. Of that total, 27,000 tons is processed and the remaining 100,000 sold fresh in the domestic market. The yields, low in national terms, are a regional average of 7.2 tons/hectares (SARH/INIA/CAEVA 1983:118).

Table 4.7. Major Agricultural Crops, Irrigated and Non-Irrigated Area, Valley of Apatzingán, 1986.

<u>Crops</u>	Irrigated	%Irrigated Area	Rainfed	%Total Area
Lime	17811	24.3		
Banana	3168	9.5		
Mango	6949	4.3		
Other Fruit	3565	4.8		
Total	31493	42.9		
Fruit				
Subtotal	31493	42.9		20.8
Basics*	23739	32.4	66977	59.8
Horticulture**	9144	12.5		6.0
Other***	8957	12.2	11404	13.4
Subtotal	73333		78381	
Total		151714 hectares		

*Includes maize, sorghum, rice, and beans.

** Includes cantaloupe, honeydew melon, cucumber, and watermelon.

*** Includes sesame, sorghum for forage, grasses for pasture.

Source: SARH/INIFAP/CAEVA 1986a:15.

Upon planting, the orchard must be irrigated 1-2 times a week. After that, timing of irrigation depends on the season. During the end of the dry season, from February until the rains start in June, irrigation every 15-20 days is required (SARH/INIA/CAEVA 1983:120). Water remains one of the major constraints to expanding lime production in the valley of Apatzingán. Once the tree has reached maturity, fruit can be harvested year-round, although the maximum harvest is May-June. Another lighter harvest peaks in October-November (see Figure 4.5).

The crop requires a high initial capital investment and several years before the trees actually produce a marketable fruit. Harvest during the rainy season competes for labor needed in planting maize and sesame.

Mango

Mango (Mangifera indica L.) historically has not been a major commercial crop in Michoacán, representing about 6000 hectares in Michoacán, and contributing only 1% of total agricultural value for the state (SARH/CGDA 1982a:69). Yet, in recent years, export production has expanded dramatically, and many producers consider mango as an alternative to cantaloupe. In 1979, the valley exported only 12,200 tons, but by 1985, total export had expanded to over 50,000 tons (Gaona 1985:7).

The most important export varieties are Tommy, Haden, and Kent; the valley historically has produced a wide range

of local varieties, such as Manila or Chebokano, which are consumed locally. In the valley, there are two production cycles per year: (1) January through February, for the local criollo varieties, and again in (2) March through August, for the exported varieties (see Figure 4.5).

The social organization of production differs markedly from cantaloupe production. According to land tenancy estimates, 75% of production is under control of private producers, whereas only 25% in ejidal land (SARH/CGDA 1982a:70). In financing, distributors give credit to the packing house and then the packing house may finance different producers. Those requiring financial assistance particularly need credit to maintain the orchards (Lucy Madrigal, personal communication, 1988). In general, mango production requires both an initial investment to establish the orchard and the loss of the parcel to annual cropping. Ejidatarios can rarely afford these costs.

The commercialization of mango follows the pattern established by cantaloupe, although the U.S. companies buying mango are usually not the same ones buying cantaloupe. Opportunities to expand mango production and export are constrained by the same factors as cantaloupe: (1) dependence on outside financing, (2) UNPH organizational structure, and (3) dependence on U.S. market, although with mango, there are greater possibilities to export to Europe and Japan.

The most severe restriction faced by Apatzingán producers is the U.S. restriction on mango imports to protect U.S. domestic fruit production from infestation by the Mediterranean fruit fly, present in mangos grown in Chiapas, a state south of Michoacán. In 1987, the U.S. Environmental Protection Agency banned the use of ethyl dibromide, an insecticide commonly used in Mexico to control all fruit flies, not just the Mediterranean fruit fly. As an alternative, the U.S. proposed the use of a hydrothermic treatment, hot water bath, which had only been tested at an experimental level in U.S.D.A. research facilities at Waco, Texas. Experimental tests had shown this effective in killing insect larvae, but the process had never been tested before commercially. Apatzingán was the guinea pig for U.S. import restrictions.

The problems were endless. (1) The U.S.D.A. had numerous restrictions about the construction of facilities (screen, nets, etc.) at the packing houses, as well as the technical details required of the computerized hot water baths. This equipment had to be inspected through trial runs before the U.S.D.A. inspectors would sign the permits necessary for the packing house to begin packing for export. (2) The waiting was expensive. The five associations which could afford to invest in the expensive equipment also had to pay for the U.S.D.A. inspectors, the trial runs, and the fruit lost sitting in the packing house waiting for the

export permits. (3) The hot water baths were damaging to the fruit, burning the outside. The burns did not appear for several days, with the color gradually turning brown, only to arrive at the U.S. border inspection discolored.

(4) There were repeated mechanical failures, in the sensors, which required extra trial runs on the equipment before the USDA inspector would sign the permit. In part, these problems reflected the experimental nature of the equipment. The trials in Weslaco, Texas, were run on small volume production, never on the commercial scale of Apatzingán.

Cucumber

The cucumber season parallels cantaloupe, but the crop can harvested until May. With only a 40-45 day cycle, cucumber can be planted 2-3 times successively on one field during the dry season. In the valley of Apatzingán, there are many areas where the Ministry and regional union no longer permit cantaloupe production, particularly in areas near Parácuaro and Lombardía. Cantaloupe production first started in these areas closest to the municipality of Apatzingán, and these areas lost crops in 1980-1983 to fungal diseases and nematode infestation. Now no longer permitted to plant cantaloupe, many producers, particularly ejidatarios have shifted into cucumber production. Local technicians claim that the cucumber plant is stronger and more resistant to pests than cantaloupe. They also claim

Table 4.8. Horticultural and Fruit Crop Production, Valley of Apatzingán, 1970-1988.

	Melon	Cucumber	Water-melon	Lime*	Banana*	Mango*
1971	83334	5247	4200	60091	18208	0
1972	58920	6970	6500	62594	27968	0
1973	90912	6210	5010	65098	37728	0
1974	83590	10488	7488	64326	45040	0
1975	40123	7700	6330	63554	52352	0
1976	62043	15041	15232	64663	87808	0
1977	66960	10372	26760	65772	123264	0
1978	79780	10746	12240	74401	151744	0
1979	84412	14462	10720	83030	180224	42136
1980	40089	16818	8750	88322	131952	42960
1981	79050	11962	10245	93614	83680	43784
1982	92517	20487	10542	101408	90000	44056
1983	48991	23916	2942	109202	96320	44328
1984	65044	27991	12378	118720	98848	49960
1985	58764	23975	16521	128239	101376	55592
1986	62089	28552	6435	n.a.	n.a.	n.a.
1987	54423	20529	1914	n.a.	n.a.	n.a.
1988	49527	33845	1250	n.a.	n.a.	n.a.

*Source: SARH/INIFAP/CAEVA 1986:13. Production estimated based on hectares harvested and average yields. SARH regional estimates for lime (7 tons/hectare), banana (32 tons/hectare) and mango (8 tons/hectare).

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

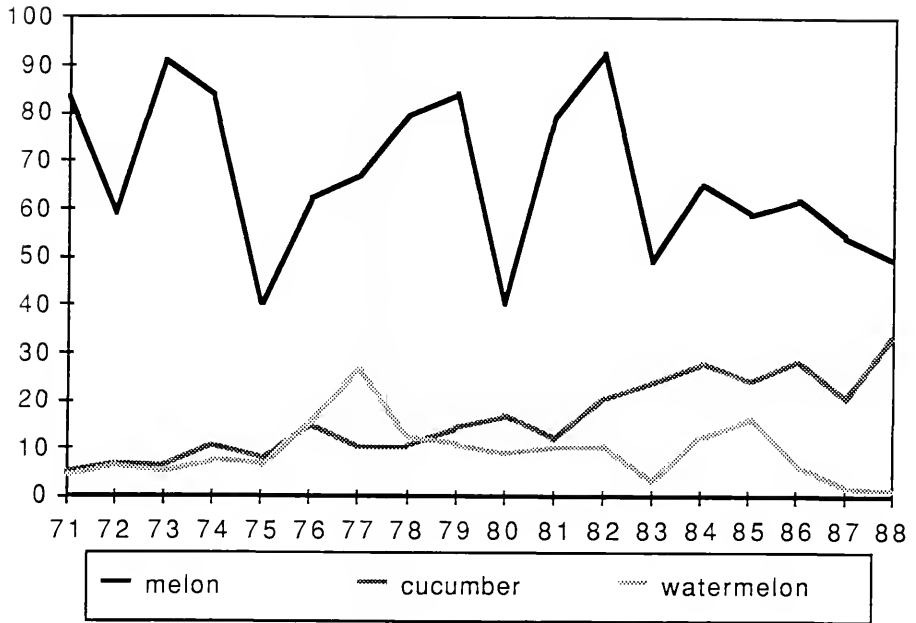


Figure 4.8. Horticultural Crop Production, Valley of Apatzingán, 1970-1988.

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

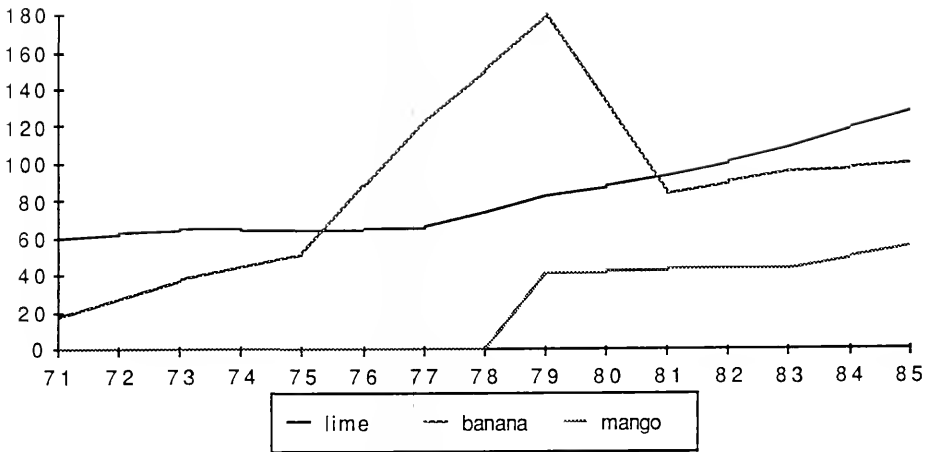


Figure 4.9. Fruit Crop Production, Valley of Apatzingán, 1970-1988

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

that cucumber grows better in compacted soil, characteristic of these areas, than cantaloupe.

In the past 20 years, cucumber production has expanded rapidly (see Table 4.7 and Figure 4.7). The organization of production and commercialization mirrors that of cantaloupe, except that the system is more vertically concentrated. Two companies, out of Texas, control 100% of the financing and commercialization for the export market, and the credit arrangements are similar to cantaloupe. Production is contracted through either some of the same cantaloupe producer groups or directly by the companies, but the company, as financier and buyer, maintains direct control over production through its own agricultural technicians. Producers are obligated to deliver 100% of the production to the buyer. There are some differences from the cantaloupe system. In the event of oversupply, the buyer can require that the producer plow the field before harvest, thus sacrificing all of the production. To the buyer, this helps to stabilize market prices. The producer is not allowed to dump the harvest on the national market, as in the case of cantaloupe, and the producer only has 36 hours to destroy his field. The producer who fails to comply will not gain access to credit the following season.

Cantaloupe

Succeeding chapters examine the technical problems in cantaloupe production, the commodity system, and the role of

the producers' associations. Within the context of the entire agricultural system, cantaloupe evolved as the major commercial crop in the region after the demise of cotton in the late 1970s. Cantaloupe has never eclipsed other crops in total hectareage because of efforts by the National Union of Horticultural Producers (UNPH) and the Regional Union to limit and control cantaloupe hectareage. As a result, unlike examples of many other export cropping systems, cantaloupe production has not expanded. Over time, total production and area have remained relatively constant, whereas yields have exhibited a steady decline since 1982 (Table 4.9). Agricultural scientists, technicians, and regional authorities are concerned about the increasing technical problems in cantaloupe production and their subsequent impact on the crop's commercial viability.

In total value and in net economic return per unit area, cantaloupe continues to overshadow other commercial annual crops. The crop is restricted to a percentage of all regional producers, only on irrigated land. Yet, the crop itself is more accessible than other commercial fruit crops.

In the case of cantaloupe, ejidatario producers have dominated export crop production since the early 1970s (see Table 4.10 and Figure 4.11, depicting the statistics graphically). In part, the large ejidatario participation reflects the successful land reform programs of Lázaro Cárdenas. Additionally, many private producers abandoned

Table 4.9. Total Cantaloupe Production, Valley of Apatzingán, 1971-1988.

	Production (tons)	Yield (tons/ha.)	Total Hectares
1971	83334	17.0	4902
1972	58920	12.0	4910
1973	97769	15.0	9291
1974	83590	12.3	6796
1975	90123	11.5	3489
1976	62043	13.8	4507
1977	66960	15.0	4464
1978	81870	13.2	6354
1979	84412	14.7	5758
1980	85727	7.3	11716
1981	84480	15.0	5632
1982	92517	13.0	7018
1983	48990	14.0	3311
1984	65044	12.0	5623
1985	58763	11.0	5283
1986	62088	10.0	6173
1987	54423	21.0	2496
1988	49527	8.0	5749

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

Table 4.10. Cantaloupe Production by Private Producers and Ejidatarios, Valley of Apatzingán, 1971-1988.

	Private Producer		<u>Ejidatario</u>	
	Total (tons)	Value (1000 U.S.\$)	Total (tons)	Value (1000 U.S.\$)
1971	20043	2084.5	63291	6582.3
1972	14520	1138.4	58920	4619.3
1973	17854	1319.4	73552	5589.9
1974	13062	930.0	70528	5021.6
1975	2242	260.1	37881	4654.3
1976	6263	545.7	55779	4859.4
1977	4155	347.3	62805	5249.9
1978	4593	404.4	79279	6978.8
1979	6479	840.1	77932	10103.9
1980	6714	749.6	79013	8865.9
1981	8475	1382.9	79540	12297.9
1982	3085	1950.1	89431	14781.7
1983	4176	750.5	44814	8210.7
1984	3903	598.1	61141	8958.7
1985	5229	798.9	53535	7297.4
1986	6860	209.6	55228	3892.5
1987	6366	917.6	48057	6732.0
1988	4957	709.9	34406	4984.1

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

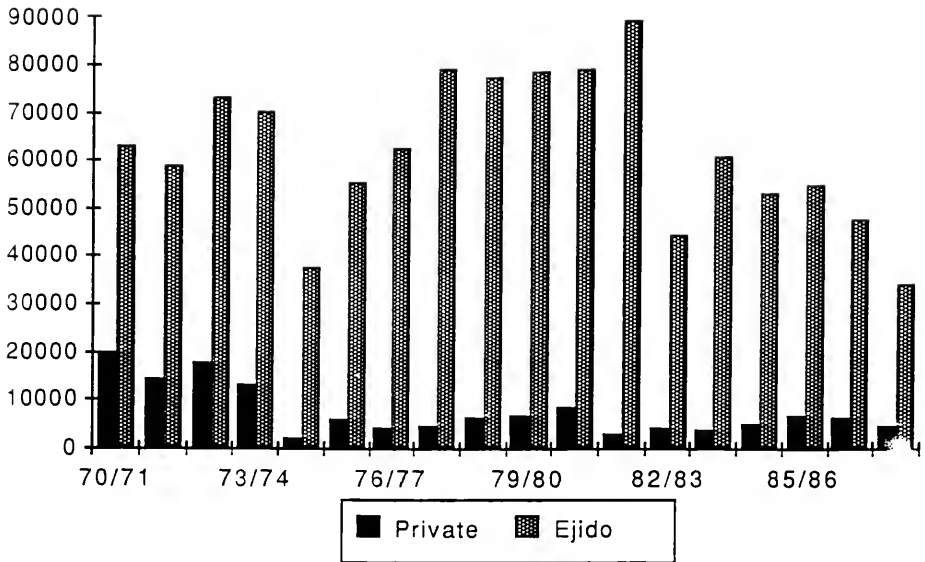


Figure 4.10. Cantaloupe Production by Private Producers and Ejidatarios, Valley of Apatzingán, 1970-1988.

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

cantaloupe production in the early 1970s, with the growth of large associations of ejidatario producers. These private producers either left the region, to grow cantaloupe in other Mexican states, such as Colima or Guerrero, or they shifted into perennial fruit crops, particularly lime and mango. The 1970s was the period of greatest expansion in ejidatario participation in commercial cantaloupe production. Later chapters discuss the role of these associations.

Conclusions

This review of commercial agricultural development in the valley of Apatzingán indicates several points, referring back to earlier theoretical discussions in Chapter Two. The bio-physical environment placed severe constraints on commercial agriculture. Irrigation first opened the region to commercial agriculture. Foreign buyers provided investment and access to markets, essential to the region's expansion into export agricultural production. The Mexican government invested in irrigation and infrastructural development, which enabled commercial crops to be grown during the dry season. The government also supported ejidatario participation by establishing organizations and extending credit, but only in commercial agronomic and horticultural crops. The most dynamic and lucrative crops, commercial fruit crops, remain dominated by the private producers in the valley.

In the valley of Apatzingán, the agricultural system evolved within a certain historical and political context. Access to irrigation separates the subsistence agricultural producers in the region from commercial producers, both private producers and ejidatarios. Within the irrigation district, government investment and support encouraged ejidatario production of commercial agronomic and horticultural crops. Without similar support in commercial fruit production, ejidatarios do not have access to commercial fruit crops, which have been more dynamic and lucrative over time. Ejidatario's active participation in cantaloupe production in the valley of Apatzingán is unusual in comparison to commercial development in other Mexican regions. Within the context of regional commercial agricultural development, Apatzingán ejidatarios have not had similar state support to expand into more lucrative commercial crops. Ejidatarios see cantaloupe as their only real economic opportunity because they earn relative low returns from commercial grain crops and they have little access to commercial fruit production.

CHAPTER FIVE

CANTALOUPE PRODUCTION AND THE PRODUCER

Introduction

Cantaloupe producers in Apatzingán face increasing problems with insect pests, soil diseases, and low yields. Technical scientists and regional authorities express concern that these problems may drive the crop from the valley. The authorities issue technical recommendations, to more effectively resolve the problems, but many producers continue as before, ignoring the regulations. Enforcing these recommendations is ineffective, if the real constraints of small producers, particularly ejidatarios, are disregarded. Ejidatarios face certain economic and organizational constraints, including increasing production costs, an uncertain market, loss of confidence in their associations, and loss of independent control over their own fields. The strategies adopted by individual producers sabotage production in the field and undermine cantaloupe production at the regional level. Examining the interface between technology and the ejidatario provides explanation of why the problems have arisen and insights into resolving them.

Thus, this chapter focuses on the ejidatario's strategies within the context of the technological system. The sections present the major components in the cantaloupe production system: (1) the biological characteristics, (2) the production process, (3) current technical problems, and (4) technical and management solutions. Each section incorporates recommended practices, differences in producer's actual practices, and explanation of the individual strategies involved.

Biological Characteristics

Cucumis melo var. reticulatus is a member of the Cucurbitaceae family, which includes cucumber, pumpkin, chayote, loofah sponge, and bitter melon¹. Cantaloupe is a warm season crop, requiring around 85-120 days from planting to harvest. In the sub-arid tropics, cantaloupe, as well as other horticultural crops, is grown primarily during the dry season. The plant prefers plenty of sunshine and heat, little diurnal variation, and slightly arid conditions, since the fruit is extremely susceptible to fungal diseases (Yamaguchi 1983:323).

¹. The true cantaloupe, Cucumis melo var. cantaloupensis, is grown only in Europe. The cantaloupe consumed in the United States, Cucumis melo var. reticulatus, is actually a muskmelon, not a true cantaloupe. In discussing the technology, the common term "cantaloupe" is used for the sake of clarity.

Cantaloupe's biological characteristics indicate that the crop requires careful regional level management over time. Irrigation levels must be balanced, providing the fruit sufficient water without leaving the soil moist, which increases the plant's susceptibility to fungal diseases. Chemical pest control is always required, yet the frost-free environment of tropical ecological systems increases the longterm likelihood of pest build-up and genetic resistance if chemicals are not managed effectively. Longterm monoculture production results in increased pest problems, reduced soil fertility, and lower yields, particularly in a susceptible crop such as cantaloupe. These bio-physical constraints produce the context within which producers grow cantaloupe in the valley of Apatzingán.

Cantaloupe Production Process

This section examines production practices in the valley of Apatzingán, Michoacán, drawing on technical recommendations of the Ministry of Agriculture and Water Resources (SARH/INIFAP/CAEVA 1983, 1986a and 1986b), of the Agricultural Experiment Station of the Valley of Apatzingán (CAEVA), and of the technical staff of the Local Agricultural Association, Apatzingán (Carrillo 1987; Flores 1987; and technical staff, personal communication, 1987-1988). Also included are the results of a 1982 regional survey of cantaloupe producers conducted by the Interdisciplinary Research Group on Cantaloupe, of the

Agricultural Experiment Station of the Valley of Apatzingán (SARH/INIFAP/CAEVA 1987b). The discussion incorporates producers' strategies, based on interviews with cantaloupe producers and agricultural technicians throughout the 1987/88 season.

The major steps in the production process are land preparation, planting, irrigation, fertilizer application, labor, pest control, and harvest². Table 5.1 details the cantaloupe production process in the valley of Apatzingán, including production activities associated with each plant growth stage. Table 5.2 presents the results of the 1982 regional survey of cantaloupe producers, detailing standard practices by cantaloupe producers in the region. The discussion draws on this information.

In commercial production, the producer faces a complex and volatile market system. Cantaloupe production requires immediate, expensive decisions at a time when future economic returns can not be accurately assessed. These decisions affect both agronomic yield and future economic returns. Yet, these two results do not always correlate; that is, hard work for 3-4 months and high yields may not necessarily result in greater income. These risk factors

². Local and technical agronomic terms are explained and translated with the aid of the Instituto Nacional de Capacitación del Sector Agropecuario, A.C. (INCA RURAL), 1982, Diccionario agropecuario de México. México, D.F.: INCA.

affect how producers view commercial production. Larger commercial producers, managing large areas with their own capital invested, see the marketing of the final product as the income. In contrast, ejidatarios often come to view the production process itself as their income.

Land Preparation

Thorough land preparation breaks up soil clods and aerates the soil, promoting better root development, and higher fruit yields. Land preparation, comprised of several plowings, harrowings, and construction of raised beds for planting, is generally done one month before planting. Regional technical scientists recommend subsoiling every 3-5 years, to aid in better root development, but few producers comply. Technicians also recommend several cross transverse passes across the terrain with a harrow, followed by final pass to level the parcel, but few farmers follow these recommendations either (Sánchez 1979b; SARH/INIFAP/CAEVA 1986b:3). Producers initially plow and harrow but are less likely to carry out extra tasks, such as leveling and subsoiling (see Table 5.2). Land preparation is mechanized; although the majority of small farmers do not own tractors, they can rent these services from other farmers.

Regional technicians also recommend planting in compact areas of 15-20 hectares of contiguous small units, for more effective manage water, labor, and pest control management (BANRURAL 1987b; CDA 1984; and SARH 1986b).

Table 5.1. Process of Cantaloupe Production, Valley of Apatzingán.

Growth Stages	Days	Changes	Tasks
1 month before planting			Land preparation plowing harrowing cross traverse make beds Seed treatment
Planting			1st irrigation
Germination	0-15 8-10	3-4 leaves	1st apply chemicals prune seedlings leave 1-2 plants
1st Bloom	18-22	1st bloom	2nd apply chemicals cultivation 1st weeding
Flowering	22-25	flowering	3rd apply chemicals cultivation 2nd weeding
Fruit-bearing	25-30	first vines extend flowering continue 1st fruits appear	4th apply chemicals align vines 2nd irrigation 2nd fertilization
Fruiting	40-50	fruits forming	5th aerial spray 3rd irrigation align vines move fruit pinch shoots
Fruit Growth	50-65	fruit maturing fruit forms net	6th aerial spray 4th irrigation align vines move fruit
Harvest	65-85		harvest fruit

Source: Technical Staff: Ruben Flores, Humberto Rosales, Ing. Hernández, Eliberto Carillo, Mario Cisneros, and Hugo Picón, Asociación Agrícola Local, Apatzingán, in Apatzingán, Michoacán.

Table 5.2. Summary of Producer Practices, Cantaloupe Production, Valley of Apatzingán, 1982.

Responses to Questionnaires		
<u>Land</u>		
tenure	59%	<u>ejidatarios</u>
	<u>41%</u>	private producers
size	57%	2-4 hectares
	37%	6-8 hectares
	<u>6%</u>	>8 hectares
<u>Land Preparation</u>		
1st ploughing	100%	complete task
harrowing	62%	complete task
soil leveling	57%	complete task
subsoiling	<u>13%</u>	complete task
<u>Planting</u>		
planting method	54%	planted in wet soil
	<u>46%</u>	planted in dry soil
bed preparation	90%	planted in low bed
	<u>10%</u>	planted in high rows
<u>Fertilization</u>		
fertilizing	100%	fertilize at planting
	64%	2 fertilizer applications
	<u>32%</u>	3 fertilizer applications
<u>Labor</u>		
cultivation	87%	3 or more cultivations
select plants	72%	prune plants 1 time
weeding	43%	1 weeding
	33%	2 weedings
moving vine	58%	move 3 or more times
moving fruit	50%	move 2 or more times
pinch plant tips	33%	complete task
put fruit on rock	14%	move fruit once
<u>Irrigation</u>		
irrigate	53%	3-4 irrigations
	<u>34%</u>	5-6 irrigations
<u>Pest Control</u>		
insecticides	61%	6-10 applications
fungicides	<u>63%</u>	3-6 applications

Source: Results of 1982 survey of 79 cantaloupe producers from Parácuaro, Lombardía, Nueva Italia, and Apatzingán, the Valley of Apatzingán, Michoacán. Survey conducted by the Interdisciplinary Research Group for Cantaloupe, Agricultural Experiment Camp of the Valley of Apatzingán, (CAEVA), Apatzingán, Michoacán (see SARH/INIFAP/CAEVA 1987b).

Ejidatarios continue to plant in individual parcels within their own ejido, season after season. The small producer cannot move to newer land in outlying areas, lacking both the capital and physical capacity needed to move easily. Neither can he rotate crops, since as an ejidatario, he has use rights to a single parcel. Many distrust technical recommendations to plant in compact areas, suspecting, undoubtedly with some justification, that this represents nothing more than a pretext to reduce their independent control of their parcels.

In land preparation, ejidatarios can begin to divert some of the credit for other purposes. They may shift capital provided for production into other activities or purchase consumption goods. They may collect credit for all land preparation tasks, while actually carrying out only 1-2 plowings.

These practices can create conflicts between the ejidatario and the technician. The technician, generally hired by the producer association, provides the farmer with technical advice; yet, the technician also checks to see if the producer has performed the recommended technical practices or applied chemical control at adequate levels. Ejidatarios respect the technician's expertise, yet facing a complex and dynamic technology, they are losing their autonomy as independent producers. Ejidatarios resist

technical recommendations, such as planting in large compact areas, which reduce their control over their own parcel.

Planting

Variety. In seed selection, a number of factors are considered: market preference, length of growing period, yield, disease and insect resistance, and shipping quality. In Michoacán, the two major varieties selected are Sierra Gold and Top Mark (see Table 5.3). In the U.S. market, the Top Mark variety is preferred, but, sensitive to cool temperatures, it produces an even smaller fruit under cool growing conditions. In the early planting stages in December, when evenings and early mornings are cooler, producers often plant Sierra Gold, producing a larger fruit with less desirable traits. As the season progresses, temperatures increase, and by January-February, most plant Top Mark.

Planting method. Two methods are common: low and high bed. Technicians recommend the high bed, citing the advantages listed in Table 5.4 (Flores 1987; SARH/INIFAP/CAEVA 1986b). Producers are reluctant to change planting methods, claiming the low bed method as the traditional way of planting (see Table 5.2). However, U.S. buyers originally planted in high bed in single rows, standard in U.S. cantaloupe production. When local groups assumed direct control over production, they shifted into the low bed (Abel García, personal communication, 1988).

Table 5.3. Characteristics of Cantaloupe Varieties, Valley of Apatzingán.

	Sierra Gold	Top Mark
Growth Period	76-80 days	70-75 days
Fruit shape	large, oval-shaped vertical striations	small, rounder fine striations finer net
Fruit weight	1.5-2.5 kilos	1-1.5 kilos
Fruit quality	large cavity	small cavity
Susceptibility	funguses (<u>cenicilla</u> and mildew)	

Source: SARH/INIA/CAEVA 1986b:4 and Regional Technicians, personal communication, 1988)

Table 5.4. Comparison of Two Major Planting Methods, Valley of Apatzingán.

	Low Bed	High Bed
Bed width	2.5 meters	1.8 meters
Bed height	10-20 cms.	50 cms.
Rows	double	double
Distance between plants	30 cms.	30 cms.
Planting density	26000 plants/ hectare	35000 plants/ hectare
Cultivation	animal plow hand labor	mechanized hand labor
Advantages	traditional	less humidity on bed less fungal problems less weeds lower labor costs

Source: SARH/CAEVA INIFAP 1986a, 1986b and 1987b; and Regional Technicians, AAL Apatzingán and Regional Union "José María Morelos," Apatzingán, Michoacán.

Irrigation

The first irrigation is at planting, and the second may occur at 25 days after planting up to 45 days, depending on the soil's capacity to retain moisture. The first two irrigations are heavy, but successive irrigations, weekly until harvest, are very light, in order to insure that the fruit develops a full flavor. The number of irrigations reflects soil type and management practices of different producer associations (see Table 5.2).

Variations occur in local practices and opinions; that is, some believe it is better to "punish" the plant a little, to let the soil get very dry, before the second irrigation, while other farmers water when the soil underneath may still be damp. These differences in opinions often create problems between producers, especially older ejidatarios, with years of agricultural experience, and agricultural technicians, young, educated, with "titles." Some producers, who have grown cantaloupe for twenty years, say that now the parcels require more irrigation, that increasing salinization, attributed to years of fertilizer application, requires greater flushing of the soil. These differences between producer and technician over specific production activities are the manifestation of a fundamental struggle over control over the parcel.

Irrigation itself is a complicated and sophisticated labor task. Hired laborers dredge the furrows, placing

plastic sheets at the heads of the furrows to allow for more even water flow. The laborers construct small, dirt dams in the furrows, strategically placed to hold water and slow the flow, allowing the irrigation water to soak into the soil. Humidity should not reach to the top of the bed, as the fruit will putrefy. Neither can it be too light, leaving the soil hard and compact after drying. An irrigation which is too heavy or too light can ruin an entire crop in an afternoon. Therefore, farmers usually hire a professional irrigator, someone trained in irrigating parcels, who does the actual, physical work and supervises the laborers. The regador, or irrigator, receives a higher wage than regular day laborers (see Table 5.6), and those irrigators who establish a reputation for good work are usually in heavy demand.

Parcels within the irrigation district must be irrigated in coordination with the canal manager, a SARH employee responsible for water distribution. The canal manager generally gives the ejidatario no more than a 1 1/2 day notice before distributing water to a particular sector. The farmer works continuously for several days, day and night, to coordinate labor, to supervise irrigation, and to prevent water theft at night. Water theft is common in the valley, and the ejidatario cannot depend on his hired irrigator, an employee, to defend the crop with his life; thus, the farmer must be present at all times.

Fertilizer Application

Cantaloupe requires large amounts of nutrients, and commercial fertilizers are always recommended. Chemical fertilizers are applied at planting and at the second irrigation, usually at the time of flowering (see Table 5.1 and 5.2). Generally, producers apply a mixture of nitrogen, phosphorus, and potassium at planting because the fertilizer mixture releases the nutrients slower, critical during seedling emergence. At the second fertilizer application, also at the second irrigation, fertilizer is again applied.

Again, as in all production tasks, the ejidatarios must contract and carefully supervise hired labor. Fertilizer placement is critical. Fertilizer must be placed close to the plant's roots prior to the second irrigation, close enough to be absorbed by the plant, but not close enough to burn the plant. If laborers carelessly dispense fertilizer too far from the plant, the expense is wasted, and production suffers. The farmer, or his hired manager, must be present to supervise the laborers at these times.

Labor

Ten to fifteen days after plant emergence, laborers do the first pruning, removing smaller, weaker plants, to select for healthier seedlings (see Tables 5.1 and 5.5). At this time, soil cultivation aerates the soil and removes moisture, allowing for full root development and reducing fungal disease problems. Cultivation includes (1) working

the ground around the plant with a hoe, and (2) several plowings in the furrows between the rows with horses or small tractors. Weed problems vary depending on the soil fertility of the field. In very fertile, river bottom, parcels, weeds can be a major problem; in other parcels, they do not present problems.

As the fruits develop, laborers move and turn them several times to develop the complete and even net characteristic of a high quality cantaloupe. Laborers also move each cantaloupe to the top of the bed, so that humidity does not reach the fruit. The laborers must place each fruit under foliage, to prevent sunburn. This hand labor is critical to the development of large, export quality fruit. Most producers employ agricultural laborers to move fruit at least 2 times (see Table 5.2). The most conscientious, only 14% of those surveyed, will actually put each fruit on a small stone or foliage to prevent direct soil contact.

In hiring labor, ejidatarios may contract relatives or community members. Cantaloupe requires a great deal of labor per unit area (see Table 5.5), but, because of timing and limited production area, cantaloupe regionally does not demand large quantities of hired labor. In contrast to earlier cotton commercial production, local labor satisfies the majority of hired labor requirement. Hiring local labor entails certain problems. Some farmers consider hired laborers from the municipality of Apatzingán to be lazy and

careless, while community residents, often related from landless households, can take advantage of their kin relations³. The farmer can safeguard his production by looking for good laborers, treating workers well (e.g. providing food and transportation), and directly supervising all production tasks.

Cantaloupe production requires a high labor investment and daily, meticulous attention for a 3 month period, before the farmer actually nets a return to his investment (see labor requirements in Tables 5.5 and 5.6). Cantaloupe is an extremely labor intensive crop, requiring an estimated 94.4 person days/hectare, higher than many other agricultural crops (see Table 5.7). For the ejidatario, labor requirements are costly, constituting one of the major outlays in production. The farmer also encounters logistic problems in contracting and managing labor, as discussed above. Ejidatarios see themselves in a more vulnerable and riskier position than hired agricultural laborers, who receive a daily wage, as the ejidatario, with a small

³. In the region, there is a saying: "There is no compadre who doesn't do damage." Used in reference to business deals or labor contracts, this means that relatives or those with whom the ejidatario has fictive kin ties will take advantage of those social ties, and the farmer has little control. One compadre, as manager of the producer's field, ignored recommendations to do extra cultivations to break up the packed soil. The plants died, the field had to be replanted, and the ejidatario absorbed the loss.

Table 5.5. Labor in Cantaloupe Production, Ejido San Juan de los Plátanos, Valley of Apatzingán.

# Week	Production Activities	Total Person days	per hectare
1st	irrigation	32*	3.2
	planting	82	8.2
2nd	planting	22	2.2
3rd	chemical application	11	1.1
	weeding, 1st pruning	97**	16.2
4th	chemical application	21	2.1
	weeding	101***	25.2
5th	chemical application 2nd pruning	55	5.5
6th	chemical application	8	.8
	moving the vine	80	8.0
7th	chemical application	21	2.1
	2nd weeding	67	6.7
8th	chemical application	12	1.2
	2nd fertilizing	59	5.9
	movement of fruit		
9th	chemical application	6	.6
	2nd irrigation	61.5	6.2
10th	chemical application	7	.7
	movement of fruit	21	2.1
11th	harvest	62	6.2
12th	harvest	71	7.1
13th	harvest	87	8.7
	movement of fruit		
14th	harvest	33	3.3
15th	harvest	23	2.3

*3 irrigators on 24 hour shifts.

For 6 hectares. *For 4 hectares.

Source: Don Lalo, Ejido San Juan de los Plátanos, Valley of Apatzingán, Michoacán.

Table 5.6. Wage Scale in Agricultural Labor, Cantaloupe Production, Valley of Apatzingán, 1987/88 Season.

Hand labor	Hours worked	Pay per day*	U.S.\$**
Chemical spraying	7 a.m.-1 p.m.	7000	3.50
Planting	7 a.m.-1 p.m.	6000	3.00
Weeding	7 a.m.-1 p.m.	6000	3.00
Fertilizing	7 a.m.-1 p.m.	6000	3.00
Movement of fruit	7 a.m.-1 p.m.	6000	3.00
Irrigating	24 hour shift	20000	10.00
Mechanized activities	Price per hectare		U.S.\$*
1st plowing	80,000		40.00
Harrowing	45,000		22.50
Leveling	45,000		22.50
Bed construction	45,000		22.50
Mechanized fertilizing	45,000		22.50
Aerial fumigation	100,000		50.00

Note: Wages are for hired agricultural labor in the municipal district of Apatzingán. Wages are lower in the outer margins of the valley, and working hours longer. Also, tractor rental costs vary, depending on whether (1) the tractor driver is from the same ejido as the producer or (2) they are kin relatives.

*Hired labor may return after the main meal, again earning \$3.00 U.S. for work from 3-7:00 p.m.

**Conversion rate for pesos to U.S. dollars included in Appendix G.

Source: Data collected from Cantaloupe producers, AAL Apatzingán, Valley of Apatzingán, Michoacán, 1987/88 season.

Table 5.7. Labor Required in Different Agricultural Crops.

Crop	Person days/hectare
Tobacco	167.6
Tomato	122.3
Cantaloupe	94.4
Coffee	93.9
Mango	57.0
Cotton	48.9
Sugar Cane	32.4
Maize	27.4
Sesame	24.5
Rice	22.4
Sorghum	10.8

Source: Department of Economic Studies, BANAMEX (see BANAMEX 1988).

parcel, incurs high costs, with only the hope of good market conditions and future economic returns.

The ejidatario, farming 3-5 hectares, perceives little rigid class distinctions between his fellow producers and the hired labor he contracts from the ejido or from the municipality of Apatzingán. Since the valley of Apatzingán has not experienced the land concentration characteristic of other export crop systems, such as Sinaloa, in northwestern Mexico, neither has the classic division between management and labor developed. The appearance of class divisions, or boundaries, are seen by Apatzingán ejidatarios, lies in distinguishing between those who work in the field, including producers and laborers, and those who control the commercialization, including both the foreign buyers and the local middlemen who manage the packing houses.

Pest Control

Cantaloupe is extremely susceptible to insect pests, fungal diseases, and viral diseases. With a long growing season and frost-free environment, the valley of Apatzingán provides an excellent climate for insect pests and soil diseases. Producers who first planted cantaloupe during the 1950s remember lower doses and fewer chemicals; now producers complain that chemicals, particularly insecticides have an effective control life of no more than five years.

I remember . . . I planted 54 hectares, and only did 7 fumigations of Folidor. Cost me 89,000 pesos on 54 hectares. I paid 10 pesos a day, a little more for the mayordomos. I had all the

people and they worked harder for me. I earned 4,000,000 pesos and more and more until 200-300 hectares. Then I lost it all and had to sell off my livestock to cover my debts.

(Producer)

Control methods. In Apatzingán, producers follow calendar spraying, generally every 6-7 days, although exact recommendations vary according to organization. Some are more conservative, spraying every 7-10 days, others program chemical applications every 4-5 days. On an average, the crop receives 8-10 chemical applications before harvest (see Tables 5.2 and 5.5). Ejidatarios see calendar spraying, that is, regular, programmed chemical application, as the necessary control because they always have insect problems. They cannot incur the risks of integrated pest management, waiting to judge the damage of economic threshold levels. The producer operates under the principle that a clean field is a healthy field, and if anything moves, spray it.

Most ejidatarios apply chemical control manually until the foliage covers the field. Hired labor, generally young male teenagers, are paid a higher rate for chemical spraying (see Table 5.6). Also, in manual spraying, the producer needs to supervise that all the chemicals are used and the proper solution mixed. Everyone recognizes that there some chemical insecticides are dangerous; Furadan, used locally to control melon aphid and nematodes, is reputed to have been responsible for several deaths in the last five years.

However, the technology, and chemicals applied, are changing rapidly. As technicians experiment with new chemicals from different companies to control local pests, producers' knowledge and expertise cannot keep pace.

Once the foliage has covered the field, the ejidatario, assisted by the technician, contracts one of several aviation companies, based in Apatzingán, to aerially fumigate his parcel. Effective aerial spraying requires great skill, as the plane should discharge the chemicals from a distance of only 1.5-3.0 meters above the plant foliage. In parcels of 3-5 hectares, surrounded by trees, aerial fumigation becomes extremely difficult. Producers must be present to supervise and insure that the pilot discharges the chemicals properly. Chemical application are stopped about one week before harvesting begins, at 70-80 days after planting, depending on the seed variety selected.

Chemicals used. The types of chemicals used depend on both the immediate insect pest and the recommendations of the producer organization and the individual preferences of the producer, the two of which sometimes differ. Table 5.8 details the current chemicals and dose levels recommended by the Ministry of Agriculture for control of pests in canteloupe production in Apatzingan, but in reality, there is great variation both in chemical types and dose levels among the different producer organizations. Dose levels also vary according to the age of the plant, the level of

infestation, the presence of other pest problems, and the mixture with other chemicals.

Technical assistance. Most ejidatarios can easily identify major insect pests by the type of damage each insect causes. However, with fungal disease, nematode infestations, or nutritional deficiencies, producers must rely on technicians to identify the problem and recommend chemical control (Sánchez 1979b).

Ejidatarios are most interested in learning proper chemical application. Other pest control methods, particularly preventative measures, are less well received. Control recommendations for cenicilla, mildiu, and nematodes suggest that cultural methods are the most effective for preventing introduction of fungal and bacterial pathogens. These include: (1) good land preparation, incorporating all previous crop residue into the soil, (2) protection of natural enemies, (3) immediate destruction of crop residue after the harvest, and (4) crop rotation or fallowing of parcels after several years to reduce soil fungi and nematodes (CDA 1984; SARH/INIFAP/CAEVA 1983 and 1986b).

Technical assistance varies among different producer groups, depending on number of producer members, resources available, and distribution of landholdings. The organization's size, composition, and resources set the constraints to technical assistance. The older, more established associations, composed of large numbers of small

producers, mostly ejidatarios, experience greater logistic and management problems than small groups of wealthier producers planting in compact areas. With small parcels dispersed among different ejidos, technicians lose time travelling back and forth between parcels, reducing the amount of time and visits/week spent with each producer. Additionally, technicians cannot adequately supervise producers to insure that producers apply the chemical doses and perform the tasks recommended by the technical assistants. Compounded, the logistic problems inevitably affect yields.

Constraints to effective control. In the region, there are problems with poor applications of pesticides: (1) outside of hours recommended, (2) not at the dose recommended, (3) poor quality of the product, (4) adulteration of the chemical product, (5) mixing of products that are not compatible, and (5) poor equilibration of the application equipment (BANRURAL 1987c:8; CDA 1984; Gaona 1985; and Technical Assistants, personal communication, 1988). As discussed, some organizations lack the financial resources to employ technicians, leaving ejidatarios to make their own decisions about chemical pest control.

Producers complain that the Ministry of Agriculture recommendations are often out-dated, that insects are already resistant to chemicals recommended, and that they must spray heavier doses than recommended or switch to other

Table 5.8. Insect Pests in Cantaloupe and Chemical Control, 1987/88.

Insect Pest	Chemical Product	Dose/ha.
Gallina ciega <u>Phullophaga</u> spp.	Volaton 2.5% gran. Furadan 10% gran. Volaton 5% gran. Parathion 1000	40 kg. 20 kg. 30 kg. 5.0 lt.
Minador de la hoja <u>Liriomyza</u> spp.	Dipterex 3% polvo Folimat 1200 cc. Vydate conc. emul. Diazinon conc. emul. Dipterex 80 sol. powder	20-25 kg. .5 lt. 1 lt. 1 lt. 1 lt.
Mosquita blanca <u>Bemisia tabaci</u>	Tamaron 600 conc. emul. Folimat 1200 conc. emul. Thiodan 35%	1 lt. .5 lt. 2-3 lt.
Pulgon <u>Aphis gossypii</u>	Folidol 720 conc. emul. Folidol 3% powder Tamaron 600 conc. emul. Pirimor	1 lt. 20-25 kg. .75-1 lt. .5 kg.

Source: SARH/INIFAP/CAEVA 1986b.

chemicals. Both ejidatarios and technicians estimate that many insecticides have an effective life of no more than 5-6 years, with each successive season requiring heavier and heavier chemical doses. In the past ten years, the Ministry of Agriculture has not fundamentally changed its recommendations (see Appendix C). For this reason, many producers see SARH recommendations as inadequate to resolve their problems. Some distrust recommendations extrapolated from small test plots which do not assess the actual costs on a 4-10 hectare parcel.

Harvest

The fruit is ready to harvest upon reaching the full slip stage, when it separates easily from the vine, leaving a clean stem scar. At this time, the net should be fully developed. In Michoacán, with the use of early varieties, harvest generally occurs 75-90 days after planting. The harvest's duration depends both on the variety selected and the planting stage. Later planting, in January or February, when the days and nights are warmer, produces fruit more quickly. Given good growing conditions and management practices, a parcel can theoretically beharvested on a daily basis for over three weeks. Initially, harvesters make 1 cut/day, increasing to to 2-3 cuts/day, one in the morning and the second in the late afternoon. Harvesters identify ripe fruit both by the ease the fruit slips from the stem, as well as the color, which changes from an dull green to a

clear gray, sometimes with creamy yellow undertones under the elevated net. The producer pays transport by pickup truck to the packing house where he delivers the fruit.

In every official document, SARH and the Regional Union declare that producers should destroy the post-harvest crop residue, which if left, provides a haven for insect pests and viral diseases. In the entire region, from the ejidatario to large, commercial producer, all leave the field abandoned. The valley also maintains a substantial livestock industry, and the producer earns additional income from selling the residue off as pasture for livestock. However, at the same time, the field harbors the insect pests and other pathogens which invade neighboring producers' parcels still in production.

Cantaloupe Production Over Time

Compounded, these small problems lead to serious regional technical problems. Increasingly, the valley of Apatzingan faces serious technical problems in cantaloupe production: (1) regional declining yields, (2) disorder in regional planting programs and stages, and (3) poor chemical control (BANRURAL 1987c; CDA 1984; Gaona 1985; and Rivera 1987). Resolving these problems is not the responsibility of the agricultural technicians; yet, local authorities and directors of the cantaloupe producer organizations turn to technical research and solutions, primarily as a means of

avoiding the more difficult task of restructuring the commercialization process.

Costs of Production

Over time, cantaloupe's costs of production have increased dramatically (see Table 5.9). In general, hired labor and pest control costs have always comprised an average of 55-60% total costs of production. Farmers complain about the increased cost for chemicals, particularly in controlling insect pests. Ejidatarios who obtain credit and inputs through their own associations pay much higher costs for chemical inputs than if they purchased the same inputs in the chemical supply stores. In some situations, cost figures indicate that members pay an average of 1000 pesos (or \$.50 U.S.) more per liter of chemical pesticide from their own association's warehouse. These differences do not hold for all producer organizations.

Contrary to local conventional wisdom, chemical costs do not indicate a disproportionate increase over other production costs, although both pest control and hired labor continue to comprise the major part of production costs (Table 5.9). In pesos, the ejidatario's costs have increased dramatically, and these are the costs that the producer actually faces.

The producer says, "how is it possible that for ten years, one crate of melon valued \$3.00 and still continues at \$3.00?"

And this is the comparison. If ten years ago, it cost me 30,000 pesos to make one hectare and now costs me 3,000,000 . . . If you converted those 3,000,000 pesos to dollars and those 30,000 from ten years ago, they are the same dollars. The cost of production in dollars has continued more or less the same.

(Administrator, Regional Union)

Yields

Table 5.11 details decreased yields and increased costs of production in the past years. Technicians, producers, and buyers are concerned about insect pests and soil diseases, particularly nematodes, which, in general, have increased chemical costs to 60% of the total costs of production (SARH/INIFAP/CAEVA 1987b:16)⁴.

Some areas of the valley, where cantaloupe was first planted, have experienced severe crop losses, locally attributed to nematode infestation. In the 1982/83 season, the zones of Nueva Italia, Lombardía, and Parácuaro declared total losses on 66.7% of a total 7,169 hectares planted (Gaona 1985:15). Due to these devastations, neither buyers nor the regional authorities will authorize cantaloupe

⁴. This argument is not supported by the Regional Union's own data (see Table 4.5 in this Chapter). Comparing chemical costs over time is difficult for several reasons. One, changing prices and types of chemicals used reduces the validity of comparative data. Second, there is a great deal of variation in recommended chemicals and doses within the valley. Thirdly, employees change over time. From year to year, the type of information, such as costs for specific activities, may change, depending on the technician recording the data and on the specifics requested by the Regional Union.

Table 5.9. Costs of Production, Cantaloupe, Valley of Apatzingán, 1972-1988.

Production Task	1972*	1977**	1987***	1988****
Land Preparation	40.00 (6.7%)	88.91 (6.1%)	96.25 (7.4%)	135.50 (7.2%)
Planting	8.00 (1.3%)	67.78 (4.6%)	32.08 (2.1%)	63.39 (3.4%)
Irrigation	26.80 (4.5%)	82.71 (5.7%)	67.00 (4.5%)	67.13 (3.6%)
Fertilization	100.96 (16.9%)	129.64 (8.9%)	103.75 (6.9%)	131.83 (7.0%)
Labor	144.80 (24.2%)	299.41 (20.5%)	149.33 (10.0%)	459.45 (24.5%)
Pest Control	211.04 (35.3%)	450.68 (30.9%)	545.83 (36.5%)	514.88 (27.5%)
Harvest	66.00 (11.0%)	290.55 (19.9%)	433.33 (29.0%)	478.91 (25.6%)
Other Costs	0.00 (0.0%)	48.02 (3.3%)	66.66 (4.5%)	22.72 (1.2%)
Total	597.60	1457.70	1494.23	1873.81

*Source: SARH 1973: Table 87. Original source: Regional Union "José María Morelos," Apatzingán, Michoacán.

**Source: Durán and Bustin 1983:228-229. Original source: Regional Union "José María Morelos," Apatzingán, Michoacán.

***Source: National Union of Horticultural Producers, Culiacán, Sinaloa. Original source: Regional Union "José María Morelos," Apatzingán, Michoacán).

****Source: Regional Union "José María Morelos," Apatzingán, Michoacán.

Table 5.10. Cantaloupe Production and Yields, Valley of Apatzingán, 1981-1985.

Year	Hectares	Production (tons)	Yields (tons/ha.)
1981	5982	73654	12.3
1982	7351	84222	11.5
1983	6292	45014	7.2
1984	7156	70030	10.2
1985	7156	77244	10.8

Source: CDA 1984.

production in these areas. Producer organizations from these areas solicit permission from the Regional Union to carry the planting permits to land in other municipalities in the outlying areas of the valley. The usual result is that the directors carry the permits, leaving the ejidatario producer to plant another crop. The Ministry of Agriculture and the Regional Union have customarily granted these producers permits to grow cucumber in these areas, as locals claim that cucumber is stronger and more resistant.

Prices

Rapidly changing prices characterize the fresh fruit and vegetable commercial system. As a result, the actual return earned by the producer can vary substantially from week to week, depending on which week the producer harvested. Facing these rapid shifts in prices, the producer, throughout the production process, has little idea what price he will actually earn upon delivering his fruit to the packing house. Also, many producers suspect that grading and selection standards are changed according to the buyers' requirements throughout the season. Some producers claim that if that graders reject a high percentage of the producer's load, this reflects changes in the market, not the product quality. In response, others, particularly the buyers, contend that export standards are explicit, that producers do not often deliver the high quality fruit that would justify the higher price.

The producers, they say it's the fault of the prices . . . always the fault of the buyer. But that's where these people are wrong. If you pay them \$100 a crate, they still won't come out ahead. Because they don't have anything but pachanga⁵. Number one, everything is in the field. You can't make melons in the packing shed. They have to be made in the field.

(Buyer)

Ejidatario Production

As depicted in Table 5.11 and discussed in earlier chapters, ejidatarios have always been active in cantaloupe production in the valley of Apatzingán, expanding domination since the early 1970s. Later chapters examine this process in greater detail. In general, this represents a shift from commercial producers who dominated cantaloupe production in the 1950s to small producers, now farming plots of 3-5 hectares each. Regional agricultural technicians and authorities attribute many of the current technical problems to small producers violating norms established by the Ministry of Agriculture (SARH), the Regional Union "José María Morelos," and Mexican agricultural scientists (see Appendix E and F, and BANRURAL 1987a, 1987b, 1987c, and 1987d).

Figure 5.1 depicts the most critical points of Table 5.11. In the past 18 years, ejidatarios have increased

⁵. Pachanga is a Mexican slang term, referring to a wild party. Locally, pachanga is the lowest grade of fruit, the cantaloupe which is locally marketed or distributed directly to Guadalajara, Jalisco.

their share of total production in cantaloupe, and ejidatarios now dominate membership in the older, established cantaloupe producer associations. At the same time, total hectares in cantaloupe have remained relatively constant, regulated by the Ministry of Agriculture and Water Resources (SARH) and the National Union of Horticultural Producers (UNPH). Over time, land area/individual producer has declined, as the same quantity of hectares is distributed among a greater number of producers; currently, most producers plant only 2-3 hectares each. Cantaloupe yields have declined in the 1980s, indicating a lower return per unit area than in the 1960-1970s. This bind is particularly critical for the ejidatario, financially dependent on the earnings from one small parcel.

Technological and Management Solutions

The problems identified are the concern of all in the valley of Apatzingán, from producers, to SARH technicians, to the authorities with the Regional Union "José María Morelos." In general, technical research, primarily crop breeding and plastic technology, does not yet present a technology which resolves current problems. Management solutions rely on enforcement of norms established by SARH and the Regional Union. Both sets of solutions address technical problems, without addressing the socio-economic constraints faced by the ejidatario producer. This sabotages efforts to change regional production practices.

Table 5.11. Cantaloupe Production, by Private Producer and Ejidatario, Valley of Apatzingán, 1971-1988.

	Private (tons)	<u>Ejidatario</u> (tons)	Yield (tons/ha)	Total hectares
1971	20043	63291	17.0	4902
1972	14520	58920	12.0	4910
1973	17854	73552	15.0	9291
1974	13062	70528	12.3	6796
1975	2242	37881	11.5	3489
1976	6263	55779	13.8	4507
1977	4155	62805	15.0	4464
1978	4593	79279	13.2	6354
1979	6479	77932	14.7	5758
1980	6714	79013	7.3	11716
1981	8475	79540	15.0	5632
1982	3085	89431	13.0	7018
1983	4176	44814	14.0	3311
1984	3903	61141	12.0	5623
1985	5229	53535	11.0	5283
1986	6860	55228	10.0	6173
1987	6366	48057	21.0	2496
1988	4957	34406	8.0	5749

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

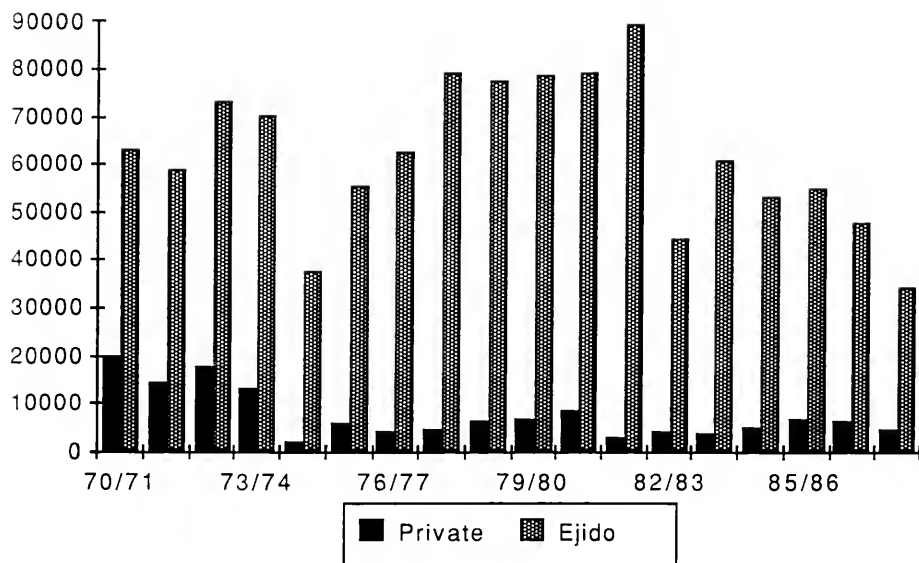


Figure 5.1. Cantaloupe Production by Private Producers and Ejidatarios, Valley of Apatzingán, 1971-1988.

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 086, Apatzingán, Michoacán.

Regional centers have conducted agricultural research on cantaloupe over the year but have always been constrained by limited financial resources.

Crop Breeding

Scientists at CAEVA, the Agricultural Experiment Station in the Valley of Apatzingán, have identified major research objectives: (1) breeding of high-yielding resistant varieties, and (2) obtaining an efficient control of pest and disease infestations (SARH/INIFAP/CAEVA 1986b:10).

Plastic Technology

CAEVA and the UAR "Jose Ma. Morelos" have conducted various field experiments using both plastic bedding and tunnels, to protect the plant from both soil and insect infestations (see González 1988). At CAEVA, the established research program proposes to reduce chemical costs and protect the plant from soil contamination (SARH/INIFAP/CAEVA 1987a; and SARH/INFAP/UNPH 1988). At the Regional Union, agronomic experiments have tried to plastic technology to reintroduce cantaloupe into areas in the valley where soil fungal diseases and nematodes prevent production.

At CAEVA, use of plastic was tested in three experiments: (1) application of plastic for different time periods before planting, to sterilize the soil and reduce soil pathogens and weed seeds, (2) production in plastic tunnels to prevent insect infestation and viral disease transmission, and (3) use of bands of plastic around the

field to reflect flying viral-transmitting insects (SARH/INIFAP/CAEVA 1987a:2-3). The 1985/86 soil sterilization tests results showed positive impact in all treatments, at all levels, but the highest yields were attained when the plastic was left to cover the bed the entire crop cycle, and plants were planted in a single row. The second experiment, testing the impact on production within plastic tunnels also yielded higher results than the regional average.

In October, 1987, the Regional Union announced its research program to the local producer groups at the General Assembly (Rivera 1987). The UAR "Jose Ma. Morelos" conducted field experiments in plastic technology, directed by its technical department, both in 1986/87 and 1987/88. In 1986/87, the technical department netted low profits, approximately \$400.00/hectare, but the cost/benefit analysis omitted transport costs and other hidden costs (UAR 1987). In both years, logistics prevented application of the plastic for a long enough period before planting. As a result, chemicals were required during production, increasing costs.

In reality, the cost of plastic technology is beyond the small producer. The expense of actually covering 6000 hectares in the entire valley is unfathomable. Technical experiments are conducted on small plots, from .25-.50 hectare, and the results then extrapolated to a larger

scale. Agricultural scientists hired skilled, better paid laborers and oversee that the laborers follow their specific instructions in the placement of plastic and construction of the tunnels. The experiments are carefully conducted and the results valid. The problem is that, for the immediate situation, the recommendations are inappropriate to the needs or the capacity of the small producer in Apatzingan.

Producers recognize this also; they respect the experiments of the scientists but feel that neither the technical scientists, nor the Ministry of Agriculture, offer practical solutions to their current severe crisis in cantaloupe production technology. In response to agricultural research, many agricultural technicians with the local associations feel that further research cannot resolve the immediate and pressing technical crisis in the region. In the field, technicians decide recommendations, draw conclusions about technical trends and problems, all based on general observation and communication among technicians.

Management Solutions

In the past ten years, the Agricultural Directive Committee (CDA), Ministry (SARH), and Regional Union have repeatedly issued policy recommendations to resolve the problems discussed in this chapter. In 1987, agency officials, regional authorities, and producers carried out a series of work groups to examine the organizational,

technical, and commercialization problems in cantaloupe (BANRURAL 1987a, 1987b, 1987c, and 1987d; and Appendix F). On August 20, 1987, SARH issued a statement of norms which appeared in the regional newspaper in Morelia, the capital of Michoacán (see Appendix E). These norms follow the recommendations recognized by regional technicians and directives as necessary to the continued production of cantaloupe in the valley of Apatzingan.

Conclusions

Cantaloupe production is a complex, sophisticated, and demanding labor process. The crop cannot be neglected; good producers must be in the field every single day, checking foliage, root damage, fruit formation, and soil conditions. The farmer must make rapid, expensive decisions about control procedures, mobilizing and coordinating labor, capital, and chemical inputs. Given the complexity of the interaction between the crop, chemicals, and the biophysical environment, the ejidatario often selects a control procedure, relying on a general sense of the problem and proposed solution. Lacking sufficient technical knowledge, he relies heavily on previous experience, the experience of other neighboring farmers, and those technicians whom he trusts as serious, conscientious, and hard-working.

Ejidatario Constraints

The ejidatario in the valley of Apatzingán enters into commercial cantaloupe production lacking the resources or

capability of the commercial producer. The small producer cannot respond to increasing pest problems, higher costs, and declining yields by shifting production to the outer parts of the valley or changing production technology, as do larger farmers. Instead, the strategies adopted by individual ejidatarios, compounded at the regional level, result in the technical problems observed by the agricultural technicians and regional authorities.

The ejidatario doesn't even care about harvesting because he doesn't get anything back. Now, what the grower wants is just the financing. The grower (producer) actually does very little of anything. They want the the buyer to furnish the money, the inputs, everything.

(Buyer)

Noncompliance continues because regulations and norms do not change the underlying causes, the socio-economic factors which led producers to ignore the norms in the first place. Until the U.S. distributors, regional authorities, or producer organizations can address these constraints, producers will continue with the same individual economic strategies which undermine the productivity and long term viability of the cropping system.

Insecure Income

Neither the producer organization, nor Regional Union, can actually guarantee the individual producer's income. Despite assurances by the Regional Union that limited regional production will increase market prices, the

producer knows that if he restricts production, and everyone else continues to overproduce, he loses even more. Also, the producer knows that the market responds to forces beyond the control of the Regional Union and SARH.

Conflict Between Individual and Regional Needs

As the commodity system becomes more complex and volatile, organizations exercise more authority over production and commercialization. The ejidatario views this as an attempt to control his autonomy in his own field. A sustainable commercial agricultural system in the valley of Apatzingan requires that individual ejidatarios' interests be suppressed to the long-term needs of the region and crop itself. The individual farmer loses control over management decisions in his own parcel, as the technician tells him which chemical to spray, when to irrigate, whether his crop needs another cultivation, among many recommendations. As a rule, the ejidatario respects the technician, soliciting his advice, but at the same time, many individual practices, regarded by technical scientists as "poor" farm management, represent the individual producer "thumbing his nose" at the restrictive bureaucracy of endless permits and regulations.

The biological needs and sensitivity of cantaloupe make it an ideal crop for the valley of Apatzingán, only if the crop can be managed within the entire environmental system. In response to increasing problems with insect pests and soil diseases, agricultural scientists change chemical

recommendations, but still treat the problem within the context of the farmer's field. Maintaining long term viability in cantaloupe production requires management on a regional scale. Organizational factors are critical, yet dealing with these issues runs counter to strong economic and political forces. The technicians can issue recommendations, but as long as market conditions and outside economic interests undermine the economic security of the individual ejidatario, technical scientists can not successfully manage production at the regional level.

. . . given the technical problems currently faced by Apatzingán producers, we run the risk of losing the crop in the Valley of the Tierra Caliente, which would result in a real catastrophe for a large number of producers, as well as for the hired agricultural laborers and those working in related sectors. In order to eliminate the indicated danger, it is indispensable that producers realize a great force, that is, to sacrifice individualism and economic interests, to change inadequate agricultural practices, in order to save the crop of melon in our region.

(CDA 1984:6)

CHAPTER SIX

CANTALOUPE AND THE AGRIBUSINESS COMMODITY SYSTEM

Introduction

An agribusiness commodity system encompasses all participants involved in the production, processing, and marketing of a single farm product, in this case, cantaloupe for export to the United States (Goldberg 1974). The commodity system includes chemical suppliers, agricultural laborers, farmers, packing house employees, government technicians, representatives of U.S. distributing companies, and wholesalers and market distributors in the United States. Within this system, both Mexican and U.S. agencies also coordinate, regulate, and structure the production and commercialization process.

Studies of specific commodity systems demonstrate great variation, with different factors combining to produce a particular system. The first section presents the economic structure of this commodity system. The analysis of Apatzingán's cantaloupe commodity system examines: (1) major participants, their roles and relations within the system, and (2) the commercialization process, analyzing the constraints producers face in commercial production of

cantaloupe. In this way, this chapter examines the social and political mechanisms that participants use to manipulate and defend their interests in the economic system. Within the regional system, there are two primary levels of negotiation and conflict: (1) between the U.S. buyers and the regional organizations and institutions, and (2) between the individual producer and the organization.

Monopsony and the Market System

The commodity system has a structure, based on economic organization, legal regulation, and local level organization of production which set the conditions within which producers, authorities, and buyers interact. Apatzingán cantaloupe producers produce an agricultural commodity for a commercial market and inevitably face the constraints imposed by that market system.

The Monopsony Situation

In economic theory, a monopsony occurs in a resource market situation when there is a single buyer of a particular resource¹. In Apatzingán, 4-5 U.S. distributors are the major buyers, purchasing most of the fruit to export to the U.S. market. The U.S. buyers cannot maintain total control over the local market, as there are low costs to

¹. Technically, when there are several undifferentiated buyers of the same resource, this market situation constitutes an oligopsony. The term monopsony will be used as the concepts and firm strategies apply to both oligopsony and monopsonistic competition.

entry², so there are also smaller companies, buying for shorter periods and in smaller quantities. Still, these companies, more or less, adhere to the local price set by the larger companies. Additionally, they control a smaller percentage of the market and do not finance production to the degree of the larger companies. Overall, Apatzingán continues to constitute a monopsonistic market situation.

Analysis of the monopsony draws from the supply and cost curves presented in Figure 6.1. Several points are critical. One, as the only buyer of a resource (in this case, cantaloupe), the monopsonist faces an upward-sloping supply curve. In a competitive situation, the buyer faces a horizontal supply curve, purchasing as many units as he wants at the going market price. In contrast, the monopsonist must pay higher prices to obtain more units. Second, since the supply curve increases, the marginal resource cost lies above the supply curve (see Figure 6.1). Marginal resource costs are thus always greater than supply. If the firm purchases more units, or more cantaloupe, the marginal costs to each purchase are always greater than the marginal revenues. Monopsonists, or U.S. buyers of

². There are low costs to entry in fresh fruit and vegetable trade because new firms do not have to initially invest large amounts of fixed capital, in contrast to related sectors such as agro-industrial processing. This thwarts total market control by the few large companies and the vertical concentration of the industry, more typical of traditional export crops.

cantaloupe in Apatzingán, do not earn large profits from increased purchases.

Third, to attain profit maximization, the monopsonist purchases a quantity, "a", as shown in Figure 6.1, where the marginal revenue of the product (MRP) equals the marginal resource cost (MRC). Under a competitive situation, the price paid to the producer would also equal the average cost curve (ACC) and the supply curve. However, in a monopsony, the buyer only needs to pay a price, "p", in Figure 6.1, which lies below the intersection of MRC and MRP. This box, depicted as the area, $p_v \times a$, constitutes monopsony profits.

Buyers both restrict purchases to fewer units, or cantaloupe, and pay lower prices for those cantaloupe than they would in a competitive situation. In Apatzingán, the market structure sets the conditions within which major participants in the cantaloupe commodity system negotiate to achieve their individual goals. Economic theory predicts that U.S. buyers, controlling the market, inevitably pay lower prices and purchase less fruit than they would under a competitive situation.

Factors Leading to Monopsony

Economic theory identifies two situations which foster the development of monopsonistic market situations: (1) when certain units, such as skills or resources, are specialized to a particular buyer, and (2) when resources are immobile (Leftwich 1979:374-375). The latter condition applies to

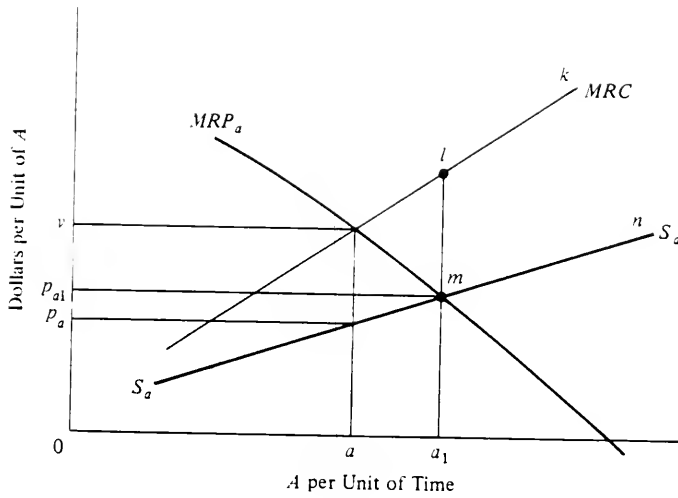


Figure 6.1. Marginal Revenue Product, Marginal Resource Cost, and Profit Maximization for a Monopsonist.

Source: Leftwich 1979:370.

the Apatzingán market situation. Apatzingán producers, possessing the product, or resource in this case, purchased by the buyer, do not have access to other buyers. This monopsony forces cantaloupe producers to sell at prices lower than they would be able to obtain under a purely competitive market situation.

Solutions to Monopsony

Solutions presented to counterbalance monopsonies are twofold: (1) minimum resource prices, and (2) measures to increase resource mobility (Leftwich 1979:376-377). In the first case, this corresponds to regional efforts to set a minimum purchase price for cantaloupe. In the second, there have been periodic efforts to look for new markets and buyers, reducing the U.S. buyer control. After examining the social and political organization of the commodity system, the conclusion returns to these issues and efforts to resolve regional problems.

Other Factors

Other factors, characteristic of the Apatzingán commodity system, also influence the ability of each group to defend its interests: (1) the broker system, (2) U.S. financing, and (3) buying contracts.

Brokers. In Apatzingán, a broker system has evolved over time, in which resources and benefits to cantaloupe production are channeled through local representatives of both producer and regional organizations. Chapter Two and

Three discussed the social and economic conditions which gave rise to this system, and this chapter examines the broker system more closely. Legal permits to plant and export cantaloupe, capital and chemical inputs, and control over membership, are all channeled through local representatives, directors of the producer groups and other regional organizations. The buyers work with these local brokers, having relatively little direct contact with individual producers.

U.S. financing. Lacking financial resources, producers contract to sell their fruit in exchange for advance cash payments and chemical inputs needed for production. The producer compromises 100% of the harvest, without knowing what the market price will be at time of harvest. U.S. buyers finance from 50-75% of local costs of production, depending on the resources of the buying firm.

Purchase arrangements. The buyer buys the fruit at the packing house, paying the equivalent of the local export price in national currency. Estimates are that 70% of all Mexican horticultural exports are sold in this way (Díaz 1978; UNPH 1982:12). The buyer covers all costs in transport, import, and distribution costs (see discussion in this Chapter on costs of distribution). Although the Regional and National Unions have conducted preliminary studies of the U.S. market (Food Business Associates, Inc. 1987; Horcasitas 1987a and 1987b; and UNPH 1973, 1988a, and

1988d), the region has not shifted into direct marketing of cantaloupe to the United States.

The Cantaloupe Commodity System

The people, the producers here don't know accounting. They can't watch out over the accounts. It's a vice, the financiers, the directives, the managers of the packing houses, always win.

Those with the packing houses, they're rich now. And, all of them, I remember them when they were poor.

But it's not profitable to produce anymore. . . only to pack.

(Former Cantaloupe Producer)

The commodity system has a structure, based on economic organization, legal regulation, and local level organization of production. This section introduces the major participants in the system and characterizes their economic relation with other groups. Later sections present more detailed components of the system, focusing on the non-pecuniary mechanisms used by different participants throughout the commercialization process.

All this is the custom of many years. All we have is melon. The directors don't work very much. They, as well as the buyers, don't want contracts that the authorities manage directly. Here, there is no order. A director that robs the producers. A director that robs the buyers. The buyers that rob the producers. So, now only a buyer that can afford to lose half a million dollars can work here. . . a luxury.

(Lawyer, Apatzingán)

Major Participants and Institutions

U.S. Distributor Companies

Major buyers arrive in September to arrange credit contracts with the producer associations they will finance. The U.S. distributor often finances 75-100% of costs of production, with the understanding that the organization will deliver 100% of the harvest to the buyer. The company distributes credit directly to the producer organization, both in capital financing and inputs. There are also many smaller buyers operating out of Texas, who may finance smaller amounts, such as 30-50% costs of production or arrive only to purchase fruit.

The local representatives exercise local power and independence beyond their role as representative of their respective firm. During the season, they travel between their "sheds," in order to oversee the packing and observe the graders. The buyers periodically meet among themselves to discuss "problem" organizations and to agree on changes in local price. Those buyers who have worked many years in the region establish close personal ties with directors of the local producer organizations.

As a rule, the relationship between the buyers and locals is based on suspicion. Producers, lacking knowledge of U.S. market conditions, attribute any price change to a conspiracy by the buyers. Buyers, reminiscing about earlier

days, complain that ejidatarios and local directors expect too much from the buyer.

The trouble with people here is that they think that Apatzingán is still the only cantaloupe-growing area. But no more. . . Apatzingán is not the prettiest girl in town.

The reason that buyers have started looking for other areas is that they've made it so hard on the buyers. They don't want the buyer to make any money. As a buyer, you have customers waiting, and they expect you to supply them with something. We do our best, but we spoiled these people.

(Buyer)

Ministry of Agriculture and Water Resources (SARH)

The Ministry of Agriculture and Water Resources (SARH) sets the planting program for all crops in the valley of Apatzingán. By controlling water permits and management of the irrigation system, SARH programs and distributes hectares for specific crops. Traditionally, SARH and the Regional Union (UAR) have jointly issued cantaloupe planting permits, but, in recent years, with the establishment of a dissident regional union (see Figure 6.2), SARH has diverted

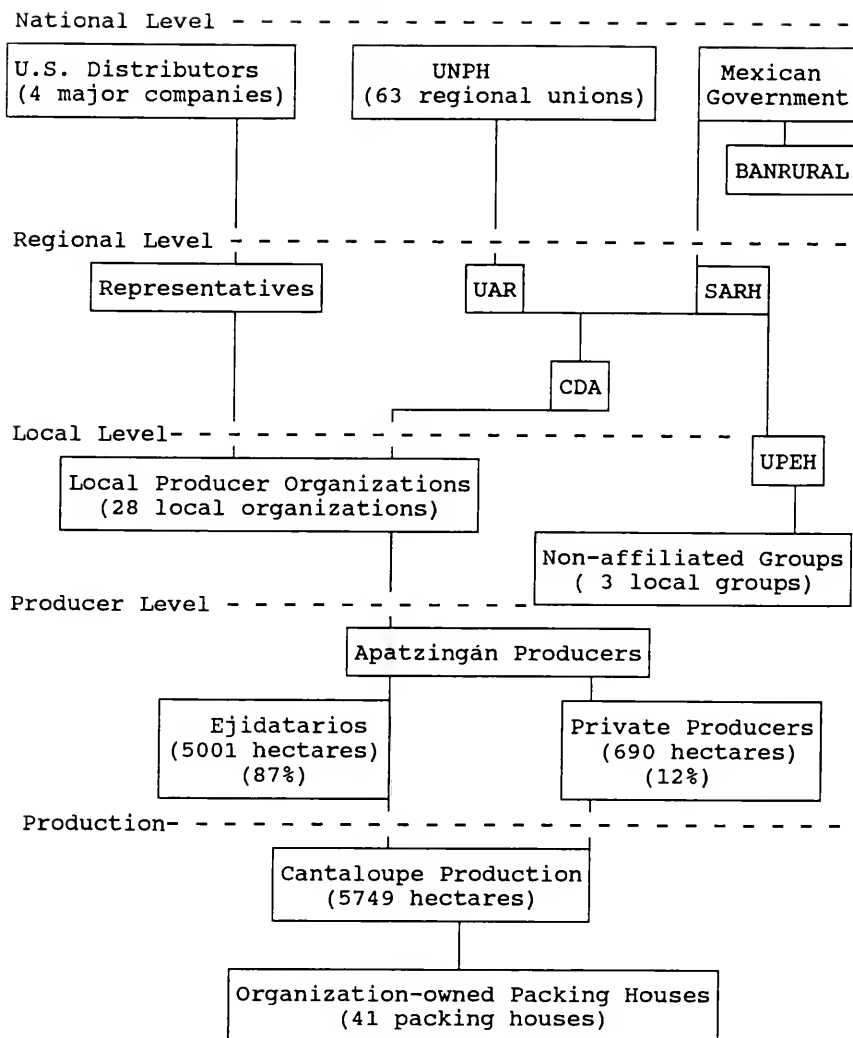


Figure 6.2. Major Participants and Institutions in the Cantaloupe Commodity System, Valley of Apatzingán.

planting permits from the Regional Union to preserve regional harmony.

You see, when other agencies give legal registration to these new groups, the Ministry of Work, the Ministry of Agrarian Reform, we, SARH, also have to accept them.

Yes, we have control over water, export permits, but neither can we deny a producer who wants to work, someone who's grown melon for many years. At best, we are thinking about what's best for the region, but the reality is another thing. We have no choice.

(Agency official, SARH)

The Ministry, as a government agency, tries to balance local competition and maintain some order in the system.

Agricultural Directive Committee (CDA)

The Agricultural Directive Committee is a consulting body at the regional level, comprised of representatives from the Regional Union, SARH, the Ministry of Agrarian Reform (SRA), and other state and regional agencies. The CDA is the maximum organizing authority in the programming of all crops in the valley of Apatzingán.

The CDA establishes the norms of production but lacks the authority to enforce its recommendations. The committee is legally authorized to program, but it cannot handledispute as the board has no legal authority to directly sanction offenders (Daniel Sánchez Perez, personal communication, 1988). For example, disputes over irrigation water, the CDA actually issues the denunciation, but only

SARH has the legal authority to force plaintiffs to adhere to the recommendations.

BANRURAL

In Michoacán, bank financing has played a critical role in the history of cantaloupe production, now limited to less than 5% of total area planted. The Rural Credit Bank (BANRURAL), which delivers credit to ejidatario producers has been the most important³. During the 1970s, Bank financing of ejidatarios reduced local economic dependence on U.S. buyers, but by the 1980s, BANRURAL had ceased all funding, returning financial control of production to the U.S. buyers. Chapter Eight discusses these historical changes, but BANRURAL's problems in export crop investment partly reflect its position as a state agency. In the 1980s, the Mexican government shifted Bank priorities, from funding of export commercial crops, to supporting production of basic food crops. The end result is that, currently, Apatzingán producers are almost completely dependent on financing from the U.S. distributor companies.

National Union of Horticultural Producers (UNPH)

The National Union of Horticultural Producers (UNPH) is a private, autonomous national union that oversees and

³. In 1975, BANRURAL was established through the merger of the Ejidal Bank (BANEJIDAL), which serviced only ejidatarios, and the Agrarian Bank of Michoacán (BANGRARIO), which serviced both ejidatarios and private producers.

represents its member regional unions and local agricultural associations specialized in horticultural production. The first regional union of horticultural producers, the Confederation of Agricultural Associations of the State of Sinaloa (CAADES) was registered in 1932, with others following in Baja California, Tamaulipas, Guanajuato, and Michoacán in the 1950-60s. By 1961, the Regional Unions established the National Union of Horticultural Producers (UNPH) on October 14, 1961 (UNPH 1982). The UNPH's objective is to nationally regulate planting and export of important horticultural crops, in order not to saturate the United States market and lower prices.

As of 1981, the National Union was comprised of 16,000 Mexican producers of specialized horticultural crops, distributed among 60% ejidatarios, 30% private producers, and 10% communal landholders (UNPH 1981). Currently, there are 24 member regional unions, representing 238 local agricultural associations, comprised of over 22,000 horticultural producers in Mexico (UNPH 1988c:1). Although independent of the state, the UNPH coordinates with SARH in programming and regulating horticultural crop production in all states of Mexico. The UNPH national headquarters is in Culiacán, Sinaloa, still dominated by Sinaloan and Sonoran producers, although regional unions from Michoacán comprise the next most politically powerful block.

Table 6.1. UNPH National Program for Cantaloupe Production, 1988/89.

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mr	Ap	My	Tot
State												
Col				25	53	719	200		25			1022
Guer			268	840	1213	512	1165	80				4077
Jal	5	110	155	13	108	138	333	20				882
Mich				800	630	3447	1866	1176				7919
Nay			50				100	100				250
N L								5	5			10
Oax		1	219	562								782
Sin		43	175	266	697	4950	2280	250	60	10	10	8741
Son	229	222	187	100	315	230	86	33				1402
Tam		5	20	50		32	843	495				1445
Ver					25	16	25					66
Total	234	381	1074	2656	3041	10044	6898	2159	90	10	10	26596

Col = Colima
 Guer = Guerrero
 Jal = Jalisco
 Mich = Michoacán
 Nay = Nayarit
 N L = Nuevo León

Oax = Oaxaca
 Sin = Sinaloa
 Son = Sonora
 Tam = Tamaulipas
 Ver = Veracruz

Source: National Union of Horticultural Producers, Division of Planning and Control of Export, Division of Information and Data Processing, Culiacán, Sinaloa (see UNPH 1988b).

Based on solicitations received from member regional unions and its own agenda, the UNPH meets annually with member regional unions in specialized assemblies for 12 key horticultural crops to distribute the authorized hectarage for the upcoming season. In 1971, the UNPH first began to regulate cantaloupe production and export (see Table 6.1 for the national program of planting permits among regions for 1988/89). In some years, Sinaloa may receive the largest total number of hectares for cantaloupe, but Michoacán always receives the greatest volume of export permits, since 60-70% of Michoacán's total production is destined for the U.S. market.

Regional Agricultural Union "José María Morelos" (UAR)

The Regional Union was established in March, 1969, as a member of the National Union. The Unión Agrícola Regional "José María Morelos" is officially comprised of 14 local agricultural associations and 3 ejidal unions, although other types of producer groups also belong. The UAR was legally constituted on March 3, 1969, comprised originally of 9 member local agricultural associations, and integrated into the national union on January 16, 1970 (Lopez 1983a:630).

The UAR's functioning is essentially service-oriented, providing information and assistance to its member associations on: (1) prices, national and in the U.S. market, (2) export markets, and (3) procedure for obtaining

permits. The Regional Union distributes the hectareage allotment among its local producer organizations. Without these permits, local producer associations cannot obtain irrigation for their crop, nor export to the United States.

The UAR is supported financially by quotas imposed on exported fruit from its member organizations. Originally, the local producer organizations paid these quotas directly, but due to increasing problems with collection, the UAR now automatically collects through UNPH representatives at the U.S. border crossing.

Ejido Union of Horticultural Producers (UPEH)

The most serious regional challenge to the authority of the Regional Agricultural Union "José María Morelos" is represented by a new regional union, the Ejido Union of Horticultural Producers of Michoacán (UPEH), organized outside the structure of both the Regional and National Unions. In August, 1988, UPEH representatives did not even attend the UNPH's national assembly to distribute canteloupe hectareage among member unions. The new Union solicits hectareage and export permits directly from the Ministry of Agriculture and Water Resources (SARH) and operates completely outside the jurisdiction of the established Regional Union. The ability of the UPEH to threaten the UAR's regional control depends on its ability to finance its member associations. Additionally, new groups may decide to remain within the UAR to more easily secure planting and

export permits. Despite the increasing threat, the Regional Union remains the most powerful in the valley and maintains the closer ties with the Ministry of Agriculture.

Additionally, groups view the new union with the same suspicion as the established union, referring locally to the new union as los parientes, literally, the "relatives," since one family dominates the small groups. This membership is flexible, and a few groups have switched back and forth, depending on credit sources.

Local Producer Organizations

Directors are elected heads of the producer associations, although some associations have retained the same committee for their entire twenty year existence. Directors generally arrange contracts with the buyers and manage the association's packing house. Historically, some elected heads have used their important position within the system for personal gain. Directors oversee the credit contracts with the U.S. buyers, the contracts for chemical inputs and packing materials, the financial operations of the packing houses, and the individual producer accounts. The director nets profits from a range of sources: (1) the maquila, a set cost for each crate packed, (2) commissions from contracts with chemical suppliers, (3) commissions from contracts with transport and crate-producing companies, (4) interest earned from credit apportioned by U.S. buyers at the beginning of the cycle and deposited in Mexican banks,

(5) profits from manipulation of controlled exchange regulations, and (6) profits from individual producers' accounts (Gaona 1985:17-20).

The directors? They don't ever want to leave. . . . When the director won't step down, he makes a new group, an association, a work group, whatever you want to call it. . . . Why? Why are there so many groups? Because the directors, they take from the producers, they take from the crates, they take from the gringos. They take when they sell the insecticides, they fight for this. Thus, if the producers make them leave, the directors just go and make another packing house, another business.

(Ex-president, Regional Union)

Yet, the director also acts as the intermediary in this economic system. In addition to controlling access to resources, the director defends his producers' interests to the regional authorities and foreign buyers. Many directors express increased concern over the problems of corruption and problems faced by their producers, although some are not really trusted, particularly by their own producers.

I think that corruption exists at every moment. It's still a question of whether the individual wants to be corrupt or not. In the case of our association, we have tried to protect and support the real producers of cantaloupe and cucumber of our organization. We are sure that with the conscientization of our producers and the necessary corrections in our work system, we have achieved the real objectives of this agricultural organization.

(Director, Producer Group)

These shameless ones... They left us to fail.

(Ejidatario)

(in specific reference to the above director)

Directors are viewed with suspicion by both producers and buyers. The stories are legendary of certain directors and how much money they have cheated, not only from their own producers, also from the buyers. In cheating those from outside the valley, the directors often gain the respect of their producers for their skill, for their ability to be chingón⁴. Stories and rumors abounded that, during the 1987/88 season, one director borrowed around \$200,000 off a private financier from outside the valley. The director rented his association's planting permits and never planted any fields. When the financier arrived in Apatzingán to see his investment, the director drove him out to see another association's plantings, and the financier left the valley without knowing.

Producers

There are an estimated 3400 cantaloupe producers in the valley of Apatzingán. There are two types of producers (as discussed in Chapter Four): (1) private producers, generally wealthier and better educated, comprising about 10% of all

⁴. Chingón is derived from the Spanish verb, chingar, which literally means to engage in sexual activity. In Mexico, as a rule, the use of any derived phrase or adjective is seen as insulting, highly derogatory, and justification to start a fight. In Apatzingán, chingón is a slang term that can also be used as a compliment. It refers to a person, usually a man, who has cunningly tricked someone, particularly someone more powerful. To be like this requires skills that not everyone has, thus, the compliment.

cantaloupe producers, and (2) ejidatarios, small producers who obtained land through the Mexican government land reform program, constituting about 90% of cantaloupe producers. This distinction between private producer and ejidatario historically has been important. The earliest producer associations included stipulations in their acts of constitutions whereby elected positions would be rotated between ejidatario and private producers.

Financial malfeasance is not characteristic of all organizations; in some of the smaller, newer organizations, members can hold their directors accountable. However, in many of the larger, established associations, the producers, many of them ejidatarios, lack the skills, education or clout to police their own directors. Many producers do not maintain their own financial accounts and have no idea, until the end of cycle, what their account standing is with the association. Producers are also worried about obtaining planting and irrigation permits for the succeeding cycle, many times controlled by the directors. In other cases, more capable or skilled producers remain silent, waiting for their own turn when the directors' terms are finished.

Agricultural Laborers

In Apatzingán, the distribution of permits among small producers has hindered the wealth concentration and the class stratification characteristic of more centralized export agricultural systems. Many agricultural laborers are

relatives of the producers, cousins or second generation descendants, who have no land and work as laborers to support their families (see discussion in Chapter Five). Little antagonism exists between producer and laborer, although many producers feel, that with increasing production costs, they earn less in the end than the laborers.

In reality, cantaloupe doesn't benefit the producer as much as the agricultural worker because there's so much work in the field. In this season, it helped them a lot because they earned regular salaries. They have money to eat, to dress . . . And the producer paid them.

But the producer? If there's no price, he doesn't earn a single cent . . .

(Ex-director, Regional Bank)

The Production Process

This section presents a schematic outline of the production process (see Figure 6.2), examining the legal requirements and commercial aspects.

Membership in Producer Organizations

The farmer obtains all required inputs through membership in a legally registered producer organization. Without membership, the producer cannot obtain the irrigation permits from SARH, nor the required planting permit from the Regional Union and SARH. As shown in Figure 6.2, this commodity system channels all inputs, including capital financing, chemical inputs, and legal permits, through the local producer organizations. As discussed, the

structure of credit and input distribution enables local brokers, the directors of local producer organizations, to exercise great control over producer access to cantaloupe production.

Planting and Irrigation Permits

The farmer solicits the planting permit from his member association in June before the season begins. The local producer organization grants the permit based on production and credit repayment record from previous seasons. This still does not guarantee a producer access to a planting permit. Many organizations have more members than existing permits and allotted hectarage and must rotate permits for alternate seasons. Also, many ejidatarios have legal rights to grow cantaloupe, but facing increased costs of production, may rent their planting permits to others who have the financial backing to invest.

The farmer should obtain the irrigation permit before planting. Some will overplant, later negotiating with the SARH employee to obtain the extra water to continue irrigate the crop, since it is more difficult to refuse water then.

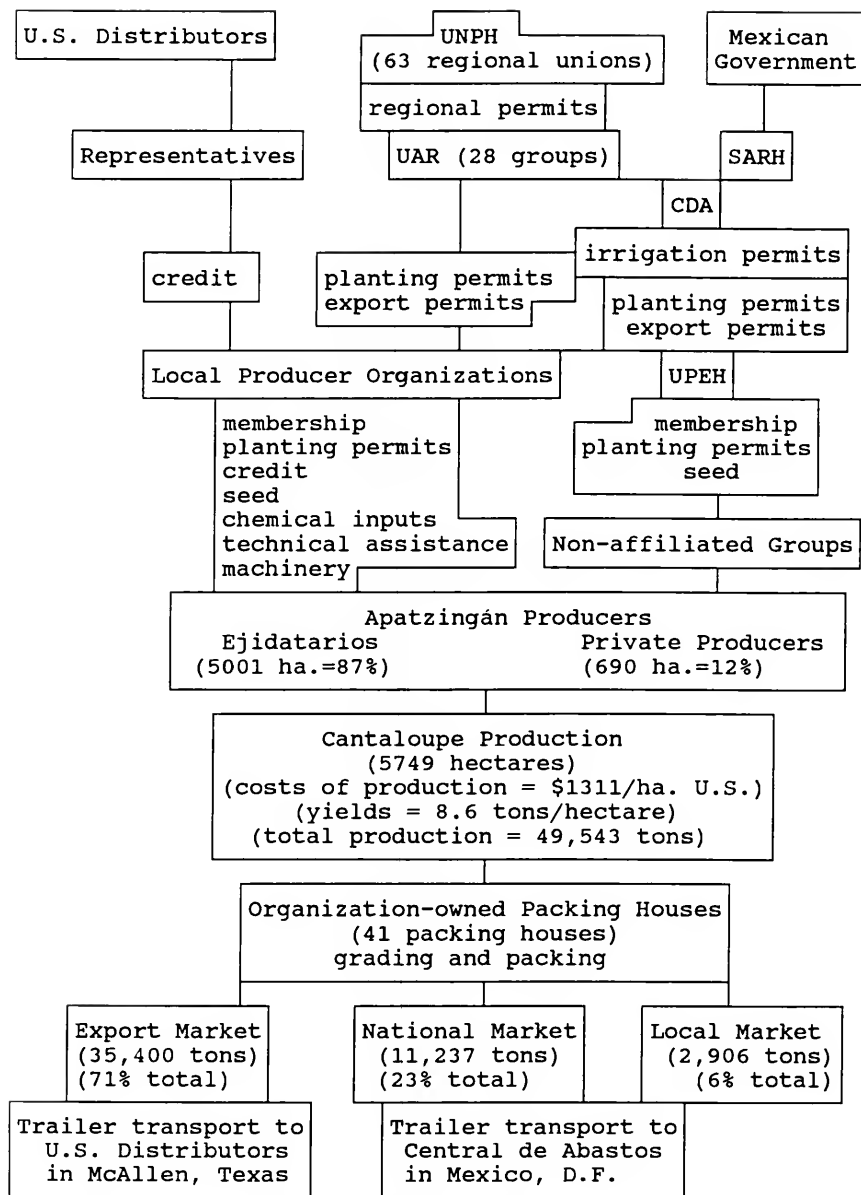


Figure 6.3. Cantaloupe Production and Commercialization System, Valley of Apatzingán, Michoacán.

As discussed in Chapter Five, overproduction is a regional problem; although planting permits may be issued for only 5000 hectares average/year, general estimates are that 1 1/2 to 2 times that is actually planted. Beyond recognizing the problem, local authorities cannot agree who is responsible for policing overproduction.

We, as the Regional Union, can't say to the SARH, "don't permit more plantings." Yes, we can tell them but we can't obligate them. Because the SARH is our authority. Here, what is needed is the strong will of SARH. If we program 5000 hectares, then SARH doesn't permit the planting of 1 hectare more.

(Administrator, Regional Union)

The UAR's position is that SARH should exert its legal authority to control overproduction.

That is to say, that the stages are definitely marked, that the stage that is 100 hectares, and if you're going to plant from December 1 to December 10, in these days you have to plant, and if not, don't permit that plant outside these dates. None of this, I'll plant 5-10 days late.

(Administrator, Regional Union)

SARH enforces regulations by not granting planting permits nor irrigation water to parcels planted without a planting permit. Once the crop is planted, control becomes more difficult. The Regional Union controls export permits, but representatives say that they cannot deny permits to those who have harvested because, by this stage, the fruit is produced. If denied permits, the producers mobilize and arrive at the governor's office, soliciting export permits.

Financing

For the ejidatario, credit is the critical factor in production, as no one independently finances commercial production. The producer obtains the planting permit from the association and the credit from the packing house, usually administered by a sociedad anónima.

The ejidatario obtains credit in weekly installments throughout the entire cropping cycle, once he has planted, although the total amount and distribution procedure varies among the organization. Farmers obtain both inputs and cash to pay hired labor and contract agricultural machinery. The organization's technician documents production activities, and the ejidatario must demonstrate that he is performing the recommended activities to continue receiving credit.

Some organizations, often those with contracts with smaller buyers, cannot totally finance their members' production. In these cases, ejidatarios may have planting and irrigation permits but lack the capital necessary to plant. They can obtain credit from other sources or plant medias with a financier, a contract relation whereby the financier puts up capital and inputs, and the ejidatario furnishes land, water rights, and labor. At harvest, the profits are divided fifty-fifty. This arrangement enables local commercial elite, not ejidatarios, to produce cantaloupe with the permits of other producers.

Under contract with the respective organization, the farmer must deliver his harvest to the organization's packing house. In commercial production, the producer's net income is also determined by the commercialization of his product. In examining the commercialization, analysis focuses on the competition and negotiating between the producer organizations, the Regional Union, and the buyers. The ejidatario, now having delivered his harvest, is peripheral to the system. The ejidatario exercises the only impact he has on the system at the level of production, both in the field and in delivering the fruit to the packing house. Once the product has been delivered, the ejidatario has no control over the operation of the market system.

The Commercialization Process

In Apatzingán, production is for the U.S. export market, which receives 60-70% of total local production. National and local markets net lower prices in national currency, and, thus, are less important. Figure 6.3 depicts the production and supply system, but non-economic factors, such as regulations, permits, and selection of fruit, also affect total supply to the export market. In examining commercialization, this section focuses on each group's specific use of non-pecuniary means to influence product supply and price (see Figure 6.4). In theory, regulations and restrictions in the marketing of a commodity product can be used to stabilize producer returns and product supply to

the consumer market (Goldberg 1974:41). In a monopsonistic situation, such as Apatzingán, participants use these mechanisms to control total export supply and price for their own economic gain. Each mechanism discussed is instrumental in affecting local groups' ability to influence the market, and their particular profits.

At this stage in the process, ejidatarios have little impact. As organized groups, they may pressure their directors and regional authorities, but, in reality, the negotiating is between the buyer and local brokers. There are three critical points in commercialization where participants use non-pecuniary mechanisms to manipulate supply: (1) in the original contracts, (2) at the packing house, and (3) in the exporting of the fruit. The next section examines the specific mechanisms at these three points in the system (see Figure 6.4 for presentation of the system).

Financing Contracts

Buyer mechanisms

Contracts. Contracts, as discussed earlier, are established between the buyer and the producer organization. Most contracts do not include specific points which increase the buyer's control in the final purchase. First, the contract does not set any minimum level price/crate, as the buyers state that they cannot predict the U.S. market price. Farmers agree to deliver their harvest, without knowing what

price they will receive. Second, the contract does not obligate the buyer to buy 100% of the fruit packed, although, locally, producers assume this is the buyer's responsibility. Finally, the contract does not specify that the producer assumes no responsibility for the fruit after point of sale, specifically, at the packing house. This point contradicts the general terms of payment at point of purchase.

Regional standards. There have been various efforts to establish a standardized contract for the region, which would protect producers, but these efforts have rarely lasted more than one season. As contracts are established between the buyer and local producer organization, the Regional Union and other regional authorities have little control. Earlier during the 1970s (see discussion in Chapter Eight), buyers were required to deposit a letter of guarantee.

The Regional Union (UAR) assumes a responsibility to investigate U.S. companies, to determine their financial viability and their credibility as a serious, responsible buyer. Yet, given the dependence on U.S. financing, the UAR cannot extract favorable contract terms for the producers.

Before, there weren't so many problems because we, as the Regional Union could demand all the required information. Who are you? What's the name of your organization? Give us letters of credit . . .

Now, it's reversed. If the gringo comes and gives me the money, I can't ask for a guarantee. And

now, whatever company can arrive and plant. And we can't inspect the seriousness of the buyer. We have to open the doors, we have to be hoping that they operate well, but sometimes they don't pay us.

Many times they don't give us a contract. All credit is channeled through the association. Thus, if the Regional Union is too strict, at best, they don't give us a cent. If they don't lend us money, the producer won't plant, can't work. This brings social problems in the region.

(Administrator, Regional Union)

The UAR attempts to establish a contract, in which the company finances approximately 80% costs of production and guarantees to pay the organization every 3-4 days for the fruit the company is buying (Administrator, Regional Union, personal communication 1988). Most of the contractual terms are "understood," that is, verbal agreements, which work well with the four or so major companies which have purchased in the valley for years. The problem lies with the other smaller companies which may invest 25-50% costs of production or arrive only to buy; when organizations have had problems with these companies, they have little legal recourse.

Packing House

Organization mechanisms

Maquila. The maquila is a set price per crate that the packing house charges the buyer to cover packing expenses, including packing material, wire, nails, and labor. Currently, the maquila is at \$2.25 per crate, but many locals estimate that actual costs run no higher than \$1.00

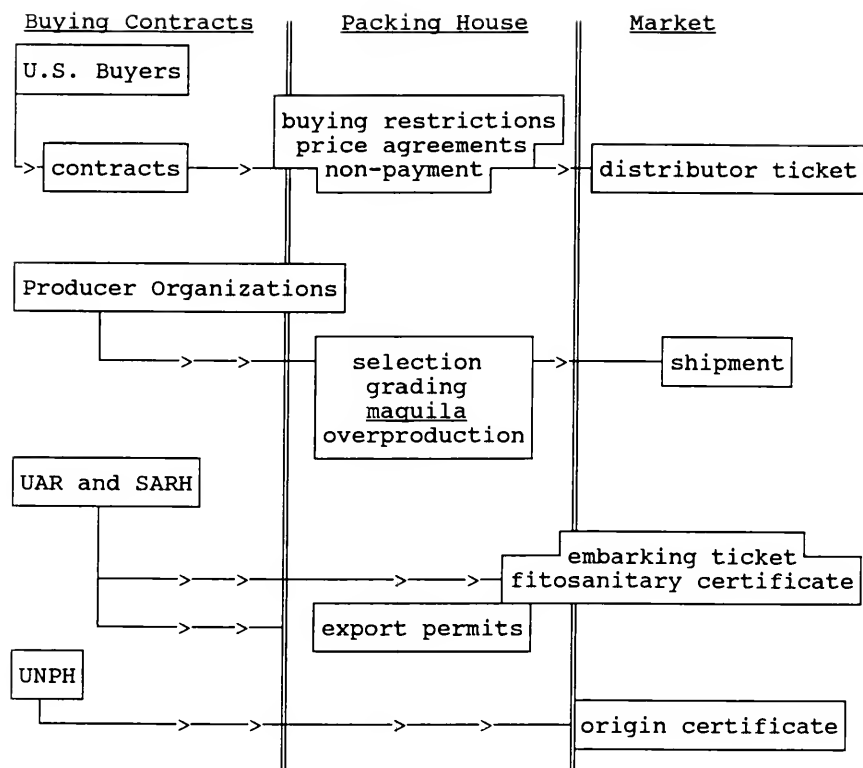


Figure 6.4. Institutions and Factors Affecting Commercialization of Cantaloupe.

per crate, with the directors retaining the remaining profits. The buyer pays the maquila as an additional cost on top of the price. Many buyers thus claim high local maquila costs increase their costs of distribution, encouraging them to shift to other regions. The maquila indirectly impacts on price since the buyer must pay the producer organization. Also, if credit repayment is slow, some buyers will pressure the producer organization to dip into the maquila, to pay back the buyer at a faster rate.

Grading. The producer organizations manage the packing, although the buyers are always present in the packing houses to oversee operations. The fruit is sorted by graders, employees of the packing house, for three markets: (1) export, to the United States, (2) national, and (3) pachanga, for the local market. Within each market category, the fruit is also graded by size, referring to the number of fruit per crate. Each size is sold at a different price, and the prices paid by the buyer usually change on a weekly basis.

The organization deducts a percentage of the price the ejidatario receives, to recuperate credit distributed during the season; the organization then pays back the buyer. This percentage varies over the season. If the buyer is concerned about market prices, the length of the season, or the threat of packing house closing early in the season, the buyer may deduct upwards to 50% of the producer's earnings.

The organization then will settle with the farmer one to two weeks after he has completed harvesting all the crop. The potential value of the ejidatario's harvest can change dramatically, depending the timing of the harvest.

In the packing house, participants battle for control of the operations. In an informal sense, the buyer often sees the packing house as "his." Buyers sometimes talk about different associations where they buy as "their" shed. The larger buyers control who sells at the packing house and may not allow cantaloupe from outside producers if the buyer does not want the extra fruit.

Selection. Specific selection criteria in grading fruit for different markets and different sizes. Yet, producers often conclude that grading is not standardized. Locally, some packing houses have a reputation for mano duro, literally, a hard hand, where the graders are stricter in selecting for the export market. These selection differences impact greatly on the producer's final income; in one case, a pick-up truck yielded 18 export crates at one packing house, and 43 at another packing house, from the same parcel on the same day.

Others contend that graders respond to outside pressures. In the packing house, three groups vie to exert influence over supply. The buyer, responding to U.S. market conditions and/or their concerns about export quality, may informally pressure graders to impose stricter selection

criteria. The producer organization, earning from the maquila, is anxious to maintain a high volume of fruit packed, irrespective of the price per individual crate. The ejidatario wants the greatest percentage of his fruit accepted for the export market, which pays higher. In extreme cases, the producer oversees the grader, checking the selection, while the buyer, checks the producer checking the grader.

Overproduction. Producer organizations also impact on regional supply by the volume produced and packed in their packing houses. Those organizations which plant more hectares than authorized inevitably pack large volumes during the harvest.

There was obviously overproduction. How do you explain, for example, that ____ was packing 10-12,000 crates/day. In accord with the authorized hectareage, they absolutely couldn't have had this production.

A good production would be around 4000 crates/day if their allotment was about 100 hectares for that stage. It is phenomenal. . . they had 22 days of packing 10-12,000 crates/day!

(Director, Producer Group)

As explained by the buyers, local price changes sometime reflect the inability of one buyer to move a large volume through his respective distributor, not necessarily the entire market. In the case above, the U.S. distributor company did not have sufficient refrigerated warehouse capacity. The company dropped its U.S. price to market

wholesalers in order to move the excess volume it was forced to pack in Apatzingán. Buyers suggested two possible solutions to this bottleneck. First, the producer organization should allow another buyer to enter into the packing house, buying up the excess volume. Second, the buyer should go back to the original contract with the producer organization. When the producer organization obviously overplanted, assuming that the excess volume would be absorbed, the buyer can refuse to buy any quantity greater than stated in the contract. Buyers retain their right to "close the gate," allowing only a certain volume in on a daily basis. This action increases the existing antagonism between producers and buyers, but the buyers see it as inevitable at times, a part of doing business.

Agency mechanisms (UAR and SARH)

Export permits. The Ministry of Agriculture and Water Resources (SARH) issues the export permits to the producer organization. These permits are required to send fruit to the United States. SARH estimates the total export volume for each organization by planting stage, based on average regional yields per hectare for the hectares originally distributed at the beginning of the season. In reality, groups who have overplanted, requiring extra export permits, can usually solicit them from SARH.

They group, all of them, and they go on a bus to Morelia, to the governor. "Know what, governor? I have this problem." And they're losing fruit every day. And the governor tells me "look, give

them the permits." And if I still don't, they go to Mexico City. And there they talk with, who knows with whom, and from there, they bring me the order that gives them the permits to carry and cross the frontier.

(Administrator, Regional Union)

Buyer mechanisms

Buying restrictions. Producers complain that graders sometimes do not abide by standardized selection criteria on fruit quality and size. If U.S. market conditions change, the buyer may decide that he does not want to buy more of a particular size of fruit. The buyer can tell the producer organization and graders that he will accept a particular size in a limited percentage of the total volume purchased.

And what happens? He (the buyer) tells me, "I don't want this, don't want that . . ." No way, we have a contract, take it . . . Pay me.

In principle, we had the understanding that our buyer would carry all the fruit. This week the buyers want small fruit, next week, they want big.

I have my crop ready to harvest. How can I change the size of my fruit? No, they said all the production. None of this, so much of this size, so much of that size . . .

(Producer)

It is the credit contracts (discussed above) which allow the buyers to restrict buying purchases, reflecting changing market conditions. If buyers are unable to move a certain size of fruit in the U.S. market, they correspondingly reduce purchases of this size to 18-20% of total volume packed at the organizations' packing houses. Producers lose, as the

particular size is then shifted over into the national market, subsequently dropping national prices. In cases where the market does not appear to recover, smaller buyers, who had only financed 40-50% costs of production, recover their credit only, pulling out of the valley and leaving the packing house without a buyer.

Price agreements. The buyers meet periodically throughout the season and, based on information from the U.S. market and distributors, change the local price, varying according to fruit size. Locals generally suspect the buyers of setting the prices as high as they can, since they know the buyers are not particularly concerned about local needs.

This newspaper interviewed travellers, who informed that it was false that the U.S. market was saturated with fruit, false also that melon of Honduras and San Salvador is competition to Apatzingán. U.S. buyers confirmed that only the melons from Apatzingán meet the quality the U.S. palate demands.

It is obvious that _____, distributor of melon, is interested only in bleeding the economy of the producer who has to deliver his fruit at ridiculous prices. And in these times of such suffering, the market plummeted as never in the history of melon in the valley of Apatzingán.

(Epoca, January 29, 1988)

The Regional Union maintains a current price list, changed daily, based on prices quoted at the border. The producers point to the difference between these prices quoted and the prices received by producers in the valley.

The buyers counter that they never receive those prices, that those are only price estimates.

The larger buyers set the local price, and smaller companies usually adhere to these prices. In cases where the small buyer offers higher prices to a certain packing house, larger buyers may act to pull the small buyer back into line. In one case, the smaller buyer had been paying extra under the table to the packing house. The larger buyer guaranteed the manager of the packing house that he would purchase the total volume through the end of the season, thus negotiating the packing house contract out from under the smaller buyer. Without this contract, the smaller company was completely shut out of the valley, specifically because he had not adhered to the "gentleman's" agreement.

Non-payment. The four major buyers usually pay promptly, but the region has had problems with smaller companies. In these cases, the Regional Union solicits the UNPH's intervention to collect from the distributor. In the worst of cases, the UNPH can close the frontier to the company, but, as a rule, the Regional Union prefers to deal with each as an individual case. UAR representatives from also complain that, the U.S. legal system is not overly concerned with repayment of foreign debts. In cases where companies have declared bankruptcy rather than pay their financial obligations, the Apatzingán organizations may wait years for court settlements.

In Mexico, the company would have to pay because we could put them all in jail. In the United States, it isn't the same. What can we embargo? They have me as principle creditor in Houston. I spend two years waiting as the principal creditor. This company owes us \$250,000. We don't know when they're going to pay, how much. At best, in two-three years, they'll say, Don Armando, here it is. . . And it's one dollar . . .

(Administrator, Regional Union)

Exporting

Once packed and iced, the fruit is trucked to the frontier crossing at McAllen, Texas, where the majority of cantaloupe from Apatzingán crosses the U.S. border. Since the trucks are not refrigerated, the fruit is iced initially in Apatzingán, and then reiced in San Luis Potosí. Temperature control is critical to insuring the arrival of high quality fruit. At the U.S. border, the distributor has employees who record each shipment, timing arrival and departure and noting condition of fruit. This coordination and timing is critical to the rapid, careful transport of a sensitive, fully mature fruit. Transport in non-refrigerated trucks leaves little leeway for problems in transport or slow movement out of the refrigerated warehouses in Texas.

The buyers contend that transportation and distribution costs reduce profits significantly (see Table 6.2). On the average, it costs \$9.33 per crate to deliver the fruit to the U.S. distributor, not including fruit lost in shipment or not sold. The buyers claim that they rarely receive the

price quoted by the W.M.V.A. They complain that producers, not knowledgeable of the market system, assume they are netting huge profits, when, in reality, the buyers risk financial loss on a daily basis.

Buyer mechanisms

Distributor tag. Each shipment includes an etiqueta, a tag of the particular U.S. distributor. Informally, the ticket is a statement of the fruit quality, and the established distributors spend years establishing their reputation in the U.S. market system. As the company representative, the buyer is particularly sensitive to even temporary changes in the quality packed at any of his packing houses, as poor quality fruit can seriously damage an established reputation. U.S. market wholesalers refer to the etiqueta as a guide in buying fruit, and a company's reputation and hard effort can be ruined with several shipments of poor fruit.

Agency mechanisms

Embarking tickets. Each shipment, or truckload, from the packing house must be accompanied by a number of permits, issued by different agencies at different levels of the export system. The Ministry of Agriculture issues embarking guides, which include the name of the association, the destination, and the volume in each shipment.

Table 6.2. Costs of Distribution in Cantaloupe Commercialization, Valley of Apatzingán, 1987/88.

Cost	Source
2.00	Fruit
1.65	<u>Maquila</u>
.75	Wire bound crate
.82	35% <u>ad valorem</u> tax (on crate and <u>maquila</u>)
.70	35% <u>ad valorem</u> tax (on fruit)
1.36	Transport
.45	Ice
.15	Reicing
.30	Mexican custom broker
.30	U.S. custom broker
.05	Personal
.10	Services
Total 8.58	Minimum to cover costs

Source: Buyer interviews, 1987/88 season, Valley of Apatzingán.

Certificate of origin. In the certificate of origin, the Regional Union also issues the fitosanitary guide, which states that the fruit contains no harmful residuals. At the frontier, the UNPH issues the certificate of origin, which states the product is from Mexico and that has not chemical residues.

Fitosanitary certificate. The fitosanitary certificate, issued by SARH to accompany each shipment, states that the shipment complies with the fitosanitary standards issued by the USDA for Mexican fruit imports.

Foreign exchange. The Mexican government also sets guidelines for Mexican exporters earning foreign exchange. Under the Decree of Controlled Exchange, Article 3, published on December 20, 1982, all exporters are obligated to sell their foreign-earned income, U.S. dollars, at the controlled rate of exchange to established Mexican credit institutions. This legal restriction creates problems for all horticultural producer groups, who must continue to pay the increasing costs of inputs, which increase based on the free market exchange rate, yet net their earnings at a lower rate, under the controlled exchange rate. In general, the UNPH contends that this prevents producers from accumulating profits which could be used for changing technology, maintaining equipment, reinvesting in production, and maintaining the local and regional administrative structure (UNPH 1986:16). The Sinaloan producers feel the impact of

these regulations more than those of Apatzingán, where profits are not generally set aside to reinvest in productive technology, research, or resources.

U.S. agencies

U.S. import restrictions. Under the Smoot Halley Tariff Act of 1930, cantaloupe is exported to the United States under a 35% ad valorem tax, the highest of any Mexican horticultural product. Mexican producers have introduced various resolutions, both on the part of the UNPH and by U.S. representatives, to repeal the tax (UNPH 1985). The Mexican producers contend that the timing of their harvest and exported cantaloupe do not jeopardize U.S. domestic production and that, at 35%, this tax is six times higher than the tax imposed on any other Mexican horticultural product imported by the United States (Gaona 1985:9). Producers are especially concerned about increased competition from Central America and the Dominican Republic, who do not export to the United States under a tariff, reducing their costs and product price. In general, Mexican producers and the UNPH are extremely sensitive about U.S. non-tariff policy and, particularly, the role of organization of U.S. domestic producers in limiting Mexican horticultural exports.

International Market

In entering commercial production, producers in the Valley of Apatzingán face competition from other Mexican

regions and other countries in Latin America. The earlier discussion on monopsonistic market structures indicated that buyers profit under situations of overproduction and low prices, since they control the market. In the case of Apatzingán, this situation is exacerbated as the same buyers who finance cantaloupe production in the valley also finance cantaloupe production in competing Mexican states. Competition further reduces any local control over the export market.

Competition from Other States

Apatzingán producers and directors suspect buyer claims that competition drives down local prices. Producers view the buyers' strategy as a conspiracy to undermine what little control the producers retain over local production.

The buyers are threatening to go to other zones, that's true, but those buyers there are the same ones here. The same buyers are in Guerrero, Oaxaca, are in Tamaulipas. You know, the same thing they tell us here, they tell the producers in Guerrero and Oaxaca.

When we are producing, they tell us we have to lower the price, because the fruit is poor quality. "The good fruit is from Colima," they say. And I've gone to meetings in Colima, and the buyers say, "This fruit is no good, the best fruit is from Michoacán." This is the argument they use to lower the price.

They always threaten us with other zones. And for ten years, they've been threatening us with other zones. And for ten years, they've been leaving for Central America, for Colima. If it were really good, they would have already left Apatzingán.

Still, they continue coming to Apatzingán to plant the largest area. And there, they always plant

less. . . That's their politics. . . It's the same here, there, in all parts.

(Administrator, Regional Union)

Buyers, on the other hand, contend that production in other regions is easier than in Apatzingán. They claim several factors lower costs of production. First, the yields are higher. Second, the buyers still directly own the packing shed. This means that the buyer does not have to pay the maquila to the organization, assuming the direct costs of hiring labor. All buyers claim that the maquila is an inflated cost, and they reduce costs by purchasing elsewhere. Third, there are economies of scale, and direct control over packing reduces cost/crate packed when buyers expand the volume packed. In contrast, the maquila is a set price/crate packed, and the cost to the buyer does not change if the volume increases. Fourth, buyers are working with large scale commercial producers in Colima and Guerrero. In some cases, the buyers may only furnish the seed, with the producer assuming all costs of production, or in others, the producer may require some financing, but the buyer's investment is much lower.

Your investment is lower and very well guaranteed by good yields. Here, forget it. . . your investment is higher and you don't know what you're going to get out of it.

(Buyer)

Comparing cantaloupe exports from 1970-1988, the data in Table 6.3 indicate that Apatzingán indeed faces increasing

Table 6.3. Total Cantaloupe Export Production, 1970-1988.

	Mich	Sinal	Guerr	Jali	Tamaul	Coli	Total
1971	51491	20340	0	9041	4394	0	87818
1972	52471	14939	0	7796	1049	0	80442
1973	58646	14144	59	6097	2512	0	84275
1974	53324	25716	59	5296	4856	0	91230
1975	44694*	24337*	329*	8468*	3329*	0*	824*
1976	36065	22958	599	11639	1802	0	73576
1977	37946	35131	2616	10799	4729	77	96067
1978	42788	36202	4941	14835	2130	0	103376
1979	48339	23982	5535	13774	2900	0	96410
1980	32310	37564	6438	10066	4019	0	92307
1981	44057	25807	5007	8389	2292	13	87285
1982	54188	8192	5405	10469	2213	0	84285
1983	20747	28497	4456	7705	5109	974	74359
1984	47458	26913	8246	3565	6362	2592	105242
1985	46983	3473	9415	5532	6568	7366	92226
1986	51864	16620	8468	6378	12351	12373	122917
1987	44231	19205	11960	1921	5802	9624	110362
1988	47808	7553	21288	3769	3559	9636	117447

Major cantaloupe-producing states in Michoacán, Sinaloa, Guerrero, Jalisco, Tamaulipas, and Colima.

*Figures interpolated, as actual data not available.

Source: National Union of Horticultural Producers (UNPH), Culiacán, Sinaloa.

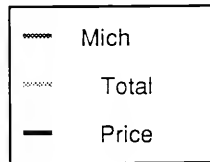
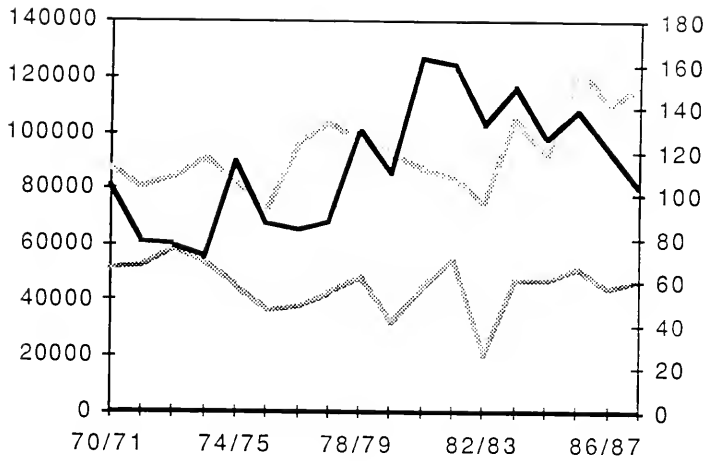


Figure 6.5. Total Cantaloupe Export Production, 1970-1988.

Source: National Union of Horticultural Producers (UNPH), Culiacán, Sinaloa.

competition from other states. Figure 6.5, depicting market share distribution over time, shows that new states entering into export production present a real threat. Second, in Table 6.3, Mexico's total volume increased from 1970-1988. Although Apatzingán maintains its total production, it loses its share of total exports as new states enter into the export market. This bind becomes especially critical in considering changes in market price and total export volume over time (see Chapter Nine). Apatzingán faces deteriorating export market conditions in part because new exporting states increase total Mexican export supply, reducing the market price over time.

Competition from Other Countries

In recent years, Mexican producers have become generally concerned about Central America's expansion into fresh fruits and vegetables. Apatzingán producers see Honduras, El Salvador, and Guatemala as a threat to their market share. In 1987, UNPH representatives, including the president of the UAR "José María Morelos", Apatzingán, visited cantaloupe-producing areas in these three countries, interviewing producers, technicians, managers of packing houses, and buyers. In summary, they conclude there are still major problems in expanding Central American cantaloupe production: (1) maritime transport, which limits rapid access, volume of shipment, and security of delivery, (2) lack of available inputs due to bureaucratic factors,

(3) absence of qualified personnel, and (4) national insecurity (Rivera, Altamirano, and Horcasitas 1987a and 1987b). Although most Apatzingán producers do not believe that the Central American producers can expand production to compete with them, many directors view new areas as another threat that buyers can use to drive the price down in Apatzingán (Santos Rivera, personal communication 1988).

In contrast, the data on Latin American cantaloupe production from 1977-1985, see Table 6.4, suggests that potential export market problems arise from other factors. Cantaloupe export production in the Caribbean and Central America, although increasing, does not yet represent a significant portion of the export market. Mexican total production has increased much more during the same period. More importantly, U.S. domestic cantaloupe production has increased even more; this reflects technological improvements and steady yield increases throughout the 1970-1980s. Although the timing does not directly conflict with Mexican production, increased domestic production facing an inelastic demand curve may negatively impact U.S. market price for canteloupe.

Dependence on U.S. Market

On an average, 60% of local cantaloupe production goes into the export market; of that, almost 100% goes to the United States. Capital financing by U.S. buyers makes the region totally dependent on the U.S. market. As long as the

Table 6.4. Cantaloupe Production in Latin America, 1977-1985.

	1977	1979	1981	1983	1985
North America	901	1018	1141	1223	1280
Canada	1	1	0	1	1
Cuba	40	43	52	65	45
Dominican Re .	1	1	1	6	6
Guadeloupe					1
Haiti					1
Honduras		1	1	1	1
Mexico	249	250	302	315	350
Panama	1	1	1	1	2
U.S.A.	606	719	771	814	855
South America	264	280	326	344	351
Argentina	56	72	58	62	65
Brazil	38	30	70	91	90
Chile	123	130	145	148	152
Colombia	6	7	7	7	7
Ecuador	7	6	11	5	5
Paraguay	22	22	24	25	25
Peru	9	10	7	25	25
Uruguay	3	3	4	2	2

Source: F.A.O. Production Yearbook, 1977-1985, Food and Agricultural Organization.

region lacks independent financing, producer organizations cannot expand into European or Asian, particularly Japanese, markets.

Unfortunately, the markets are very difficult. We can't force the buyers to buy melon if they don't want it, and this passed this year. The U.S. didn't consume what it normally consumes. Not only in melon. We saw many occasions in terminal markets. Tomatoes, eggplants, zucchini, green beans, cauliflower, carrots, weren't selling.

I did comparisons with earlier years. There was more production, more fruit, and the markets were active. The prices had to drop. Because of this, reduced the percentage bought. This reduction in percentages wasn't an imposition of the companies, nothing more than a necessity of the market.

(Administrator, Regional Union)

There have been some efforts at the national level to expand marketing in the U.S. (Food Business Associates, Inc. 1987; Horcasitas 1987a and 1987b; UNPH 1987b, 1987c:2-4, 1988a, and 1988d). These studies have identified a number of factors preventing expansion: (1) deficient product quality, (2) poor image by U.S. consumer, (3) inadequate commercial practices, (4) lack of commercial organization, (5) excessive and deficient intermediaries, (6) contraband, (7) disorder in production and export, (8) financial dependency, (9) U.S. producer campaigns to undermine prestige of Mexican production, and (10) high tariffs (Horcasitas 1987a and 1987b).

In Apatzingán, local producer organizations and the Regional Union have initiated efforts to expand into other

markets, particularly Japan or Europe. Several constraints have prevented this diversification. First, Japanese and European buyers are not willing to finance production, preferring to come to the region only to buy the harvested fruit. Second, buyers prefer to sell by commission, remitting the net returns to the producer organizations at the end of the season. Third, Japan and Europe are very distant, and, with a perishable crop, such as cantaloupe, the high cost of the required air transport increases the consumer price.

Conclusions

In the commercialization of an export commodity, ejidatarios have no direct control over the system. Their acceptance of the existing structure, based on practical necessity, reinforces this "broker" system. Although fully aware of the problems in this commodity system, producers lack the ability to initiate changes. Many local directors and regional authorities consider that financial dependence on intermediaries, combined with local level problems of competition have trapped the valley in the existing commodity structure. They claim that new markets and crops are critical to breaking out from under the hold of the U.S. distributors. Specific factors work against diversification of the agricultural economy and reduce local control over the system.

Perishability of Crop

Transportation frustrates efforts to expand into other markets. Cantaloupe must be harvested when ripe, and the mature fruit has a very short shelf life. In selling to the European market, the fruit arrives in a poor state if shipped by boat. Air shipment is prohibitive, increasing product prices and jeopardizing expansion into a new market. The Regional Union has financed small shipments to markets in Belgium or France, but these have always been exploratory, as a promotion. Some scholars argue that fresh fruits and vegetables' perishability inevitably thwarts the full integration of a commodity system into the international capitalist market (Mann and Dickson 1978).

Dependence on a Single Crop.

Apatzingán producers established "specialized" producer groups, organized around a single crop. Other sources have suggested that this strategy both (1) narrowed the vision and alternatives of producers, and (2) undermined the potential for politically strong diversified local producer organizations (Alonso López González, personal communication 1988). The next chapters, Chapter Seven and Eight, discuss the historical disintegration of local producer associations.

Direct Exports

A small percentage of Mexican horticultural exports are exported directly to the United States, to distributors, or

middlemen, who then receive a commission for selling to U.S. wholesalers. Under this system, the distributor generally does not advance capital for production costs but may for harvesting and packing expenses. Once the sale is completed in the United States, the distributor then deducts his expenses from the price received: (1) sales commission, (2) adjustments for reclamations of quality, if a problem, (3) import costs, (4) commercialization costs covered by the producer's account in Mexican territory, and (5) any previous advances to the producer (UNPH 1982). At the end of the season, the balance accumulated throughout the crop cycle is remitted to the producer organization. Chapter Eight examines Apatzingán's historical experiences with sales by commission, but, in general, the producer organization can net a higher return, if their producers will wait 5-6 months before receiving their net profits.

Small producers in Apatzingán cannot wait the time required nor take the risks involved in selling fruit by commission in the international market.

To expand, we need security for the producer. Generally, the European community buys, they say, "send me this quantity of fruit. The fruit arrives. They sell, take off their costs. Then, they say it's not enough to cover your costs, to Mexico City, to Europe.

We need a guaranteed price in Apatzingán. There is a price of guarantee and the company that buys pays all transport costs.

(Administrator, Regional Union)

Dependence on U.S. Financing

Lack of independent financing is one of the most immediate constraints facing the Apatzingán producers. The dependence on financing by U.S. distributors prevents local level producer organizations from negotiating contracts more favorable to their producers. It prevents the region from exploring other markets or diversifying its agricultural base.

Channeling of Resources

All required inputs and permits for cantaloupe production and commercialization are channeled through the producer organizations: (1) planting permits, (2) credit and chemical inputs, and (3) export permits. This concentrates the directors' control over the commodity. In contrast, other regions have diffused the local control over resources in export crops.

Needs of Ejidatarios

The specific needs of ejidatarios in commercial agriculture impose constraints which encourage the "broker" system, where intermediaries control distribution of resources and benefits. The ejidatario needs a guaranteed income at harvest, and cannot afford to wait the 5-6 months required when selling fruit at a higher price by commission. Requiring financing for production, the ejidatario enters into contracts which compromise 50-100% of the harvest,

without guaranteeing a selling price or percentage of the total harvest.

All the producers are here, waiting. . . Why? You know the producers here. Two, three, to four hectares of melon - 12,000,000 pesos to produce and how much do they get from the sales? At best, they get 12,000,000 pesos. When they get paid, there it stops.

They don't win but they lived 3-4 months, and if they net 1,000,000 pesos that helps them live the rest of the year, until November when the season begins again. . . And next season, there they are. . . waiting for credit to plant melon.

(Administrator, Regional Union)

Unable to secure individual financing or market the crop independently, the ejidatario tolerates the existing system, with the expectation that the middlemen continue to deliver the resources required to produce cantaloupe.

It's that the corruption that we know and have lived with for many years, this is the understanding of all the producers. It is logical that those who have a certain schooling, find in the formation of a new group and construction of a new packing house, the sure road to solve their economic problems.

(President, Regional Union)

The contract between producer and organization is based on a patron-client relationship, yet, the producer has expectations. The producer is fully cognizant of his subordinate position vis-a-vis local middlemen and, in general, of the abuses committed by intermediaries in the system.

. . . as producers, we already have an clear idea of the problem. The real problem is that for sure we can't say anything contrary about our

functionaries who have permanent relations with those foreigners.

(Producer)

The Apatzingán ejidatario lives with corruption, but that does not mean he accepts it, rather that he recognizes it as an inevitable part of this commodity system. Given the channeling of resources through local brokers, producers recognize that intermediaries control their access to export crop production.

CHAPTER SEVEN
PRODUCER ORGANIZATIONS

Introduction

Social science research in Mexico has extensively examined the relationships between small producers, or peasants, organizations, and the state. Earlier research on Mexican peasants focused on community social organization, particularly the social resources mobilized by peasant households to protect their economic interests. The peasant household draws on support from both horizontal alliances, those of equal status, or vertical, those of a different socio-economic status (Wolf 1966b:77-81). Wolf's use of "coalition" enables him to avoid the pitfalls of either "the formalism inherent in prevailing structural-functionalist paradigms" or "the overly rigid application of Marxism" (Hewitt de Alcántara 1985:89).

In the 1970s, Mexican social science advanced the theoretical understanding of the peasantry and the state by empirically examining the basic assertions of many theoretical frameworks, particularly Marxism. In contradiction with orthodox Marxist predictions, in Mexico, the peasantry did not disappear under industrial capitalism;

their absolute numbers increased. Neither did they become "proletarians"; they continued to mobilize politically but only temporarily to reclaim land, to become petty bourgeoisie. Through extensive fieldwork and theoretical debate, Mexican social scientists developed more sophisticated notions about the articulation of different modes of production, role of the peasantry as a class in industrial capitalism, capital's exploitation of peasant labor, and the future of the peasantry. Many questioned their own government's motives in developing the Mexican countryside, none more fervently than Arturo Warman:

. . . almost all (forms) of public investment in the countryside - irrigation, credit, scientific investigation, agricultural extension, guaranteed prices - (had) operated as subsidies to capitalist production.

(Warman 1980a:200)

Division in Mexican social science arose between those, such as Roger Bartra (1974), who saw the peasantry as increasingly subordinated by industrial capital's progressive development, and other Mexican scholars, such as Angel Palerm and Arturo Warman, who studied the multiple strategies adopted by peasants, stressing their resiliency and capacity to withstand broader external forces.

Warman's study of Morelos peasant producers in commercial vegetable production documents their adoption of new agricultural technology and crops, increased use of chemical inputs, and commercial market expansion. Small

horticultural producers were able to compete in Mexico City markets specifically because of their continued ties to a series of intermediaries, or brokers, and their use of traditional social relations to mobilize the intensive family unpaid labor needed to remain competitive (Warman 1980b).

The fact that anthropologists working within the classical Marxist-Leninist tradition supposed the peasantry to be gradually absorbed into the wage labor force of capitalism in the process of proletarianization in effect left no organizational common front in existence around which a qualitatively separate peasantry could rally and fight. . .

If rural people were not generally proletarianized, however, but simply engaged in a desperate effort to preserve a distinctive form of existence, they reached the definitive point of confrontation as a group with a common cause to defend, and that cause lay outside the rationale of capitalism.

(Hewitt de Alcántara 1985:165)

Here, Hewitt de Alcántara essentially questions many social science notions of peasant organization and resistance; if social scientists see no "organizational common front," it may reflect the scholar's theoretical biases, not the reality of peasant, or small producer, strategies.

Throughout the post-Revolutionary periods, the Mexican government actively intervened in the economic and political organization of campesinos, small rural producers. The government created a multitude of different associative forms, under the jurisdiction of different governmental

agencies and operating under different legal restrictions. Many Mexican scholars criticized these programs, arguing that they do nothing more than further the government's national economic and political objectives (Warman 1980a). These forms also provide opportunities for local level groups both to obtain resources from the government, such as credit and capital inputs, and to mobilize alliances with external authorities. Closer examination of ejidatario and producer organizations, in the case of Apatzingán, provides a better understanding of behavior in formal organizational structures, e.g., how local intermediaries and producers maneuver and compete within legal structures to defend their position and compete economically.

These theoretical concerns refer back to the earlier discussions in Chapter Two on integration of the peasantry and loss of autonomy. Organizations represent a non-economic mechanisms which the state can use to control or structure the impact of foreign commercial expansion at the local level. In the case of Apatzingán, the state has repeatedly used formal organizations as a means of guaranteeing ejidatarios access to commercial agriculture, as well as mobilizing their political support (see also Chapter Three). Within these formal organizations, local groups, both ejidatarios and local intermediaries, maneuver legal strictures for individual gain.

This chapter examines the different types of cantaloupe producer organizations in the valley of Apatzingán, as well as other important formal organizations. Then, comparative analysis examines similarities and differences in: (1) purpose, (2) membership, (3) economic activities, and (4) location, among the different types. Each subsection discusses the constraints faced by ejidatarios in formal organizations. The conclusion examines factors constraining local and regional efforts to control these organizations and how this has affected the current crisis.

Producer Organizations in Apatzingán

Look, the reality here is when they made the organizations . . . First was Apatzingán, in order to make the Regional Union, we made Buenavista, Nueva Italia, Gabriel Zamora, and Antunez . . . After, nothing more . . . Every time there is a change of directors, they make a new group or association. The reality is the directors don't want to leave.

Why? Because they all want their own packing house. If there are forty organizations, there are forty packing houses. If not, the organization is not born . . .

(Ex-president, Regional Union)

The history of cantaloupe production in the valley of Apatzingán is characterized by the increasing number and type of local producer organizations. Local intermediaries and producers exploited various legal opportunities when regional institutions limited the number of producer associations planting cantaloupe. Chapter Eight provides a

more detailed historical analysis; in this chapter, the focus is on the organizational structure.

At present, 43 producer groups registered to produce and pack cantaloupe for export with the Ministry of Agriculture in the 1987/88 season, as well as a number of non-registered groups, operating primarily as packing houses. However, as of the general assembly in June, 1987, only 23 producer groups had filed their acts of constitution with the regional union and Ministry of Agriculture to document their legal status (BANRURAL 1987a; 1987b; 1987c; and 1987d). The registered groups consist of local agricultural associations, ejidal unions, cooperative societies, societies of social solidarity, and work groups (see Table 7.1).

The evolution of cantaloupe producer groups in the valley of Apatzingán resembles a family tree, with groups separating from their original associations to establish new organizations. In retelling their regional history, producers and directors alike refer to a new group as "born" of another association (see Figure 7.1). The history of these groups splitting off is also the history of family disputes, betrayals between trusted friends, and the continuous search to better one's individual economic situation. In Apatzingán, temporary alliances and betrayals are part of the daily life of doing business. The groups were established in conflict, but the directors continue to

work together at the regional level and periodically ally with one group against another. In the long run, economic survival requires maintaining social formalities and accepting past injuries, although offenses are never forgotten. As in the commodity process, within this formal organizational structure, there is flexibility based on informal alliances and personal patron-client relationships. However, given the volatility and complexity of this commodity system, small producers are at a special disadvantage in lack of control over resources and lack of access to information.

History of Organizations and Local Conflict

Examining Table 7.1 and the genealogy in Figure 7.1 indicates the proliferation in total numbers of producer groups. In 1970, only 7 local agricultural associations were registered to produce cantaloupe in the valley of Apatzingán; by 1987, there were 43 organizations. These groups continue to divide the existing allotment of permits (as discussed in Chapter Six) among an increasing number of organizations and producers. This section briefly examines the divisions within and among the organizations; Chapter Eight looks at broader economic and political factors that contributed to the decentralization of production and commercialization.

Table 7.1 Cantaloupe Producer Organizations, Valley of Apatzingán.

	Year Established	Number of Producers
<u>Local Agricultural Associations</u>		
Apatzingán	1967	232
Nueva Italia	1968	289
Melchor Ocampo	1969	80
Veinte de Noviembre	1969	130
Valle del Marquez	1969	321
Buena Vista	1969	162
El Chaux	1971	88
Chilatán	1967	22
Valle de Ibérica	1972	142
Felipe Carillo Puerto	1974	185
Hermanos Lopez Rayón	1974	60
Valle Primero de Septiembre	1976	35
Nuevo Urecho	1978	50
Las Cruces	1978	71
Churumuco	1986	n.a.
<u>Ejidal Unions</u>		
Lázaro Cárdenas	n.a.	n.a.
Cenobio Moreno	1974	93
Francisco J. Mújica, Aguililla	1984	n.a.
Francisco J. Mújica, NI(1)	1976	332
Francisco J. Mújica, NI(2)	n.a.	n.a.
Emiliano Zapata, Tepalcatepec	n.a.	n.a.
Emiliano Zapata, Zicuירán	1976	78
Emiliano Zapata, Los Olivos	n.a.	n.a.
Felipe Carillo Puerto	n.a.	n.a.
José María Morelos	1985	n.a.
<u>Cooperative Societies</u>		
Valle de Parácuaro	1982	38
CRAVI	1984	18
La Cofradia	1983	57
Las Paranguas	1984	29
La Cascada del Huaco	1983	63
<u>Work Groups</u>		
Marcelino García Barragán	1970	n.a.
No. 1 de Nueva Italia	1983	225
Independencia	n.a.	124
Elias Perez Avalos	n.a.	42
No. 1 de Antunez	n.a.	73
Primero de Septiembre	n.a.	51
<u>Societies of Social Solidarity</u>		
CIVI	1986	n.a.
Natividad Chavez	n.a.	n.a.
Piedra Pareda	n.a.	n.a.
San Gregorio	n.a.	n.a.
PAVA	n.a.	n.a.
La Escondida de Tahitiana	n.a.	n.a.
El Aguaje de Chavire	n.a.	n.a.

----- Local Agricultural Associations (1967-1975) -----

Apatzingán		
Buenavista		Melchor Ocampo
Valle del Marquez	Chilatán	Nueva Italia
Hnos. L. Rayón	El Chauz	20 de Noviembre
Felipe Carillo Puerto	Valle 1 de Septiembre	
Nuevo Urecho	Las Cruces	Churumuco

----- Ejido Unions (1975-1980) -----

José María Morelos	Cenobio Moreno
Felipe Carillo Puerto	Emiliano Zapata
Lázaro Cárdenas	Francisco J. Mújica

----- Other Producer Groups (1980-1988) -----

P.A.V.A.	La Cofradía	Grupo de Nueva Italia
	1 de Septiembre	C.R.A.V.I.
	Paranguas	C.I.V.I.
Marcelino G. Barragán	Independencia	La Escondida Tahitiana
	Elias Perez Avalos	
Cascada del Huaco	El Aguaje de Chavire	

Figure 7.1. Growth of Cantaloupe Producer Groups, Valley of Apatzingán.

Source: Acts of Constitution AALs, UEs, SCs, SSSs, and Grupos, Apatzingán, Michoacán; and interviews, Juan Zamora, UAR "José María Morelos," Abelardo Gaona, and Daniel Sanchez Perez, Apatzingán, Michoacán, 1988.

(1967-1975)

In 1967, with the support of SARH and the Bank, local producers established the first local agricultural association, the AAL Apatzingán (see Figure 7.1). Mexican government political and economic support enabled local elite and wealthy producers to establish the strong local producer organizations needed to defend themselves against the U.S. buyers.

This year, the melon producers will be vindicated. 1968 will be, undoubtedly, the year of the unification of our producers, the liberation from the coyotes¹, and the real conquest of the great North American markets.

(Epoca, January 14, 1968)

From the beginning, local level conflict between wealthier producers and commercial elite was apparent. Producers and financiers in neighboring municipalities began efforts to establish their own producer associations. In part this reflected a legitimate concern over transportation problems, but the directors of the new associations also wanted to gain direct financial control over the packing of cantaloupe. Those with the earlier associations responded with accusations that this local competition prevented the development of strong local producer organizations and furthered the commercial interests of the buyers.

¹. Coyotes, a slang term in Apatzingán, is derogatorily in reference to the U.S. buyers.

Pessimism reigns among the melon producers because the authorities have given the green light to form another association in Nueva Italia, which will only serve the interests of the gringo through the use of a local prestanombre².

At the new group's first meeting, only 14 persons attended, the majority of them ejidatarios who don't know cantaloupe production, much less its problems. The AAL Apatzingán is not opposed to form other groups, just requires that members be real producers, not buyers . . .

(Epoca, November 24, 1968)

At this time, the only local associations planting cantaloupe were those occupying the first tier of the genealogy (see Figure 7.1). The early associations were comprised of private producers, ejidatarios, and private financiers, but private producers continued to dominate the associations. Some associations established internal regulations, whereby the directors alternated between private producers and ejidatarios (AAL Apatzingán 1967 and 1969), in order to protect the interests of ejidatario members. In Apatzingán, the economic differences between ejidatario and private producer are less stark than other Mexican regions, although local intermediaries have made use of their ejidatario identity to mobilize support. In a major schism in the Regional Union, during which two

². Prestanombre refers to a local, a Mexican, who has lent his name to be used as a front for a commercial enterprise, such as a director of a producer organization, that is actually controlled by foreign investors.

factions established completely separate offices in Apatzingán . . .

Don Leonardo claimed that he hadn't delivered the treasury because the state authorities hadn't requested them . . . He said that his original disagreements with Don Dionicio (head of the other faction) arose because Don Dionicio is a private producer, while Don Leonardo is an ejidatario, who is obligated to defend the interests of his compañeros. . .

Don Leonardo asked that SARH review the planting permits to prove if they had been distributed among private producers and ejidatarios as corresponded, or, as is customary, if they had been given to a small group, usually always the members of the directors' committee. This caused the disagreement.

(Epoca, April 23, 1976)

On March 3, 1969, the seven original local agricultural associations had established the Regional Agricultural Union, "José Maria Morelos," (UAR), as one of the member regional unions of the National Union of Horticultural Producers (UNPH) (see UAR 1969). Under the jurisdiction of the UNPH, the Regional Union emerged as the dominant regional authority in distribution of planting and export permits, controlling access to cantaloupe production.

(1975-1980)

In the early 1970s, to resolve the internal political conflicts between private producers and ejidatarios, the Ministry of Agrarian Reform (SRA) supported the establishment of ejido unions, comprised only of ejidatario members (see UE Emiliano Zapata 1976). The second tier of

producer groups established were all ejido unions (see Figure 7.1). The ejidatarios received the support of the National Peasant Confederation (CNC) and the UGOCM, who intended to elicit political support in return for the union support. The division of cantaloupe production area was matched by a corresponding division of regional political power.

Ejidatario unions soon faced the same problems of internal corruption and misconduct as did the local agricultural associations. The original and largest ejido union, because of internal conflicts over financial affairs, split apart, as internal dissident groups left to form their groups.

(1980-1988)

In 1979, the Regional Union, "José Maria Morelos," organized a session of related institutions: Banrural, the Ministry of Agriculture, the National Union of Horticultural Producers (UNPH), directors from the local producer associations, and representatives from other state ministries. All groups expressed great concern over the increasing number of producer organizations, the subsequent division of regional political power, and the inability of the Regional Union to negotiate successfully with U.S. buyers or regionally control production and commercialization. As a result of this meeting, the Regional Union passed the following restrictions: (1) forbade the registration of any

more local agricultural associations in the valley of Apatzingán, and (2) declared that newer associative forms would have no voice nor vote in decisions of the regional union (UAR 1979). Newer cooperatives, societies of social solidarity, and work groups (see third tier of Figure 7.1) had to belong to the Regional Union in order to expedite planting and export permits; they had to pay membership dues, but they could not vote on policy or financial decisions of the Regional Union. Also, none of their respective directors could hold union offices or serve on Regional Union commissions.

The new groups continued to proliferate because many producers preferred losing their voice in the Regional Union to dealing with the internal corruption of the larger, established local agricultural associations. Also, directors of new groups recognized the economic gains in establishing new cantaloupe packing sheds, and thus sacrificed political participation for lucrative profits.

The Regional Union is financially supported by quotas collected from the fruit exported by local member associations, even those groups with no active representation. In the early 1970s, the Regional Union collected this quota through the associations in the valley, but some failed to pay in full. With the assistance of the National Union, the Regional Union now collects quotas on fruit exported at the border crossing into the United States

(Lopez Gomez 1983a). This shift increased the income of the Regional Union, its control over the member associations, and the growing resentment of the newer producer groups.

In recent years, several non-recognized producer groups have left the Regional Union to establish another regional union, the Union of Ejidal Producers of Horticultural Crops (UPEH), located in Nueva Italia. Described in Chapter Six, this union solicits planting and export permits directly from SARH, bypassing the authority of the Regional Union. Local producer associations are not above shifting loyalties; in the past years, some groups have listed themselves with the UPEH one year, the UAR next. All depends on where they can locate capital financing to produce and pack cantaloupe. Loyalties are very flexible in Apatzingán. Local level groups and, particularly, local elite are very sophisticated in exploiting different agendas of different agencies and the ambivalence of legal authority over planting permits, membership in producer associations, and establishment of new associations.

As Chapter Eight details, the proliferation of new producer associations undermined the ability of the Regional Union and Mexican state agencies to control and normalize production. Yet, the institutions that criticize the increasing number of groups are the same who grant these groups access to planting and export permits.

In summary, local intermediaries capitalized on the multitude of legal options available to "organize" agricultural producers in Mexico. Their drive to establish new groups, combined with state financial and political support to ejidatario producers, expanded total numbers of small producers involved in export cropping. The divisions reflect internal and regional conflicts over control of commercial benefits. The next section examines the different types of producer organizations, focusing on their legal status, organizational structure, and role in cantaloupe production in Apatzingán. As explained in Chapter Six, all producer groups must legally register as an associative form under a state agency in order to solicit and receive planting and export permits. The number of groups now planting cantaloupe fall under any of the following statutes: (1) Federal Law of Agrarian Reform, (2) Federal Law of Irrigation, (3) Federal Law of Agricultural Promotion, (4) General Law of Rural Credit, (5) General Law of Cooperative Societies, (6) General Law of Agricultural Associations and their Statutes, and (7) Law of Societies of Social Solidarity. Different producer groups fall under the jurisdiction of other ministries, and, as a result, have different restrictions and opportunities.

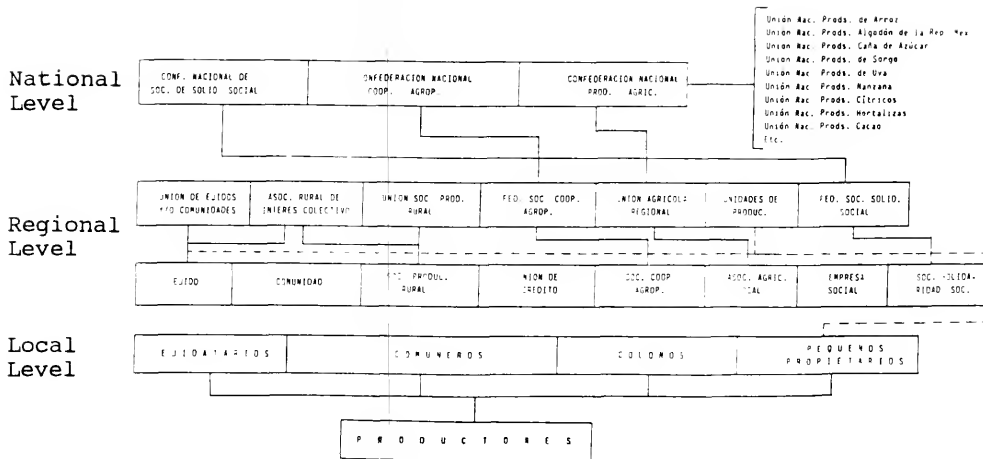


Figure 7.2. Organizational Structure of Agricultural Producers in Mexico.

Source: UNPH 1987a:1959.

The Regional Agricultural Union "José María Morelos"

The Regional Union was established to organize cantaloupe production and commercialization in the valley, representing regional producers to the UNPH. By 1987, the Regional Union comprised of 14 Local Agricultural Associations, with more than 2500 producers, with full membership privileges, and 10 other groups, comprised of 5 Ejido Unions, 3 Cooperative Societies, and 2 Societies of Social Solidarity, all lacking voting and membership privileges in the Regional Union. Additionally, 2 unregistered specialized Work Groups were affiliated with the Regional Union for the 1987/88 season (Rivera 1987). Beyond the active membership, the number of affiliated groups may shift from season to season, depending on credit sources and each group's ability to secure planting permits directly from SARH.

In representing local producers, the Regional Union proposes the following agenda: (1) establish a single commercialization channel, (2) diversify markets, (3) plan and regulate planting, (4) organize producers through associations that already exist, and (5) offer technical assistance (Lopez Gomez 1983a:632).

Local Agricultural Associations

The Local Agricultural Associations (AALs) are constituted under the Law of Agricultural Associations, in which the Ministry of Agriculture (SARH) is designated as

the responsible and supervisorial ministry (UAR n.d.). The AALs are representative and service-oriented organizations, with juridical autonomy, designed to organize agricultural producers. A group of ten or more producers can legally constitute an local agricultural association if they are specialized agricultural producers in one crop, and plant within a geographic locality, within a municipality.

Local Agricultural Associations are organized to achieve the following general goals: (1) organize producers, (2) organize the commercialization of the specialized agricultural crop, (3) assist producers in obtaining credit and commercializing their crop, and (4) represent their members in front of authorities (Lopez Gomez 1983b:818) (see also the respective acts of constitution, AAL Apatzingán 1967; AAL Buenavista 1969; AAL Chilatan 1969; AAL Hermanos Lopez Rayón 1974; AAL Melchor Ocampo 1969; AAL Nueva Italia 1968; and AAL Veinte de Noviembre 1969). This last objective is most critical; local agricultural associations are legally constituted as gremial organizations. That is, associations are not legally allowed to directly enter into financial negotiations, although many do.

To resolve this legal dilemma, producers may form Cooperative Societies outside the associations. More commonly, Local Agricultural Associations establish sociedades anónimas (anonymous societies), legally constituted private enterprises which handle the business

operations of the associations. The sociedad anónima manages the packing house and related industries (the packing crates, the wires, the ice for shipment, among others). The evolution of alternative associative forms reflects the producers' organizations inevitable need to independently manage finances and operate as a business firm in order to represent its members in a national and international market. In the actual process of establishing alternative associative forms, some directors used their position in the commodity system to consolidate control over resources and business operations.

Historically, in the valley of Apatzingán, this enterprise has been managed only by a small group of elite, the directors of the AAL. In the packing of the fruit, the packing house charges a set rate/crate packed, locally known as the maquila, to the buyer. Theoretically, excess profits should revert to the society. The ejidatario, as a member of the AAL, has no access to these profits. In other situations, directors make extra profits through bribes from companies soliciting contracts with the association to deliver services, particularly the companies which provide the packing crate, wire, or ice. Attempts to resolve this problem have generally made all producers in the association also members in the enterprise, but the producers themselves do not keep close account of the society's financial records.

Membership in Local Agricultural Associations is comprised of both private producers and ejidatarios. In the earliest stages of cantaloupe production in the valley of Apatzingán, private producers dominated the associations, but the influx of ejidatarios into the specialized cantaloupe producer associations in the 1970s shifted the internal power balance. In some AALs, political offices were distributed equally between private and ejidatario producers, and clauses specifically stated that the office of president would be rotated on a three year basis between a private producer and an ejidatario (AAL Apatzingán 1969).

Officials in the Regional Union and the UNPH have recognized the organizational limitations of the local agricultural associations. Resolving these problems is more difficult because of Mexico's unique private/public sector mix in horticultural export production. That is, the UNPH and Regional Union are non-government, private organizations, while the AALs are constituted under the Ministry of Agriculture. The UNPH has submitted various proposals for reorganizing the AALs: (1) to operate as a business firm, purchasing inputs, receiving credit, and commercializing the product, and (2) to diversity into a variety of crops within the same AAL (González Lopez 1983b:822). The UNPH expresses concern that although many AALs, particularly those in Apatzingán, operate as if they were business firms, legally they are not constituted to do

so. SARH, the actual legal authority, has never acted to change the legal constitutions.

Ejido Unions

Ejido Unions (UEs) were constituted in 1972 with the new Law of the Agrarian Reform, under the jurisdiction of the Ministry of Agrarian Reform (SRA) in order to organize ejidatario producers (Estados Unidos de México 1987). The SRA originally established the unions to handle disputes over land but soon expanded them to form economic organizations. Rather than negotiate for internal political power with private producers within the AAL structure, some large ejidos preferred to organize new associations, made up of only ejidatario membership. Local elite, often technically ejidatarios themselves, capitalized on new government credit programs for cantaloupe production to mobilize constituents and form new groups, with themselves at the head.

The legal constitution of the Ejido Unions is unclear. In internal statutes, the Ejido Union is forbidden to plant. Their legal function is to program an agricultural zone, credit, commercialization, or a planting program, but the Unions cannot plant directly. Within this structure, the SARH established "specialized groups of cantaloupe producers," consisting of one economic group of producers per ejido (Daniel Sánchez Perez 1988, personal communication). In the program assemblies, specialized

producer groups from each ejido requested a hectarage amount; in turn, the Ejido Union then solicited the total amount from the Ministry of Agriculture and Water Resources (SARH) and the Agricultural Directive Committee (CDA).

The ejido itself constitutes the membership in the Ejido Union, not the individual ejidatario, with the ejido comissioner as the designated representative. Under the Ministry of Agrarian Reform (SRA), the ejido itself is the basic economic unit, and credit, planting permits, and the right to produce any crop should be distributed directly through the ejido. As a consequence of this unclear legal provision, many ejidatarios shifted periodically in and out of cantaloupe production seasonally, and regional control over production decreased.

In the initial years, the Ejido Unions disrupted regional programming because they solicited hectarage directly from their supervisorial agency, the Ministry of Agrarian Reform (SRA), not from the Regional Union. Chapter Eight examines in greater detail the impact of these historical conflicts on cantaloupe production and commercialization. The SRA, intending to protect the interests of their constituents, the ejidatarios, did not adhere to local limits of 5000-6000 hectares. Historically, Apatzingán producers have also established a reputation for political feistiness; if producers are not granted the planting permits they want, they will show up in some

governmental office in Mexico City, demanding their rights as campesinos, defenders of the Mexican Revolution.

At first, the Ejido Unions planted outside all agency authority, but representatives of the Unions ultimately joined with the Ministry of Agriculture and Water Resources (SARH), the Ministry of Agrarian Reform (SRA), and the Regional Union in the Agricultural Directive Committee (CDA). The Ejido Unions could not get a voice or vote in the Regional Union because they were not constituted under the Law of Local Agricultural Associations. The SRA, SARH, and the Ejido Unions proposed that the Regional Union modify its internal statutes to accommodate the new associative forms. However, political recognition of 14-15 Ejido Unions would have shifted control within the Region Union, historically controlled by the Local Agricultural Associations and the private producer directors, and the Regional Union declined to incorporate the Ejido Unions (Daniel Sánchez Perez, personal communication, 1988).

Yet, the establishment of large Ejido Unions in the early 1970s had ultimately three major consequences. At the regional level, the process significantly increased the number of cantaloupe producers, primarily ejidatarios, who had little previous experience with cantaloupe production. This influx fragmented the production area from small numbers of large compact areas to large numbers of small dispersed parcels in individual ejidos. Second, it enabled

ejidatarios to organize large, politically powerful organizations which threatened private producers' control over cantaloupe production, indicating shifts in local political power. Third, the ejido unions aided a number of local elite to consolidate the political support needed to significantly influence local politics, particularly through the National Confederation of Peasants (CNC), the national peasant organization within the government political party, the Institutionalized Revolutionary Party (PRI).

As the Bank withdrew agricultural credit to cantaloupe in the early 1980s (see Chapter Eight), the Ministry of Agrarian Reform phased out the established "local ejido credit societies," and expanded the Unions to serve as credit organizations also. Originally, the Bank had established local ejido credit societies, but this created two parallel structures, economic and political, in the ejido. The president of the credit society controlled credit access, while the ejido commissioner handled land disputes, and the confusion of authority was not effective. In order to integrate matters concerning the ejido, the Ejido Unions assumed control of financial affairs of the ejido (Daniel Sánchez Perez, personal communication, 1988).

Societies of Social Solidarity

Societies of Social Solidarity (SSS) are established under the jurisdiction of the Ministry of Agrarian Reform (SRA), although they have private producers, ejidatarios,

and non-producing investors as members. Also, membership is not limited by locality, as in both the Local Agricultural Associations and the Ejido Unions. These groups generally comprise wealthier, more experienced cantaloupe producers from various parts of the region. The Societies have no legal restriction in entering into financial operations, and, thus, the organization can both organize both to produce and commercialize the product (Estados Unidos de México 1988). Additionally, the Societies, unlike later discussed Work Groups, have juridical personality, that is, they exist as legally autonomous organizations.

Many of the newer, dissident groups constituted themselves as Societies of Social Solidarity because the governmental bureaucratic procedure is easier than that in legally registering a Cooperative Society (SC), under the Ministry of Work. Propective members need only carry the act of constitution to be notarized, delivering the document to the state office of the Ministry of Agrarian Reform (SRA) for registration. The members must demonstrate the Society's economic viability to the Ministry (Jesús González Juayek, personal communication, 1988). In the case of one society, the president related the problems that another group had had in establishing a cooperative at the same time that the society formed itself.

In the internal operations, there are legal incentives to forming societies over other associative forms. "Work

Groups" are only recognized as sub-groups of other legally-recognized groups. In holding assemblies, a society is legally required to notify the Ministry of Agrarian Reform of the meeting, but "Work Groups" must also have the local representative of the Ministry present in order to legally constitute the assembly. Practically, in the other newer groups, members say that it is easier to hold directives accountable to members in smaller groups, where all producers frequently meet face-to-face. In contrast, the larger Local Agricultural Associations, faced with internal political factions and large numbers of producers, have greater problems controlling both corrupt directors and negligent producers.

Cooperative Societies

Cooperative Societies (SCs) are constituted under the Ministry of Work. According to some sources, the Cooperative Societies have not been used as much in recent years because many associate cooperative work with "socialism," and, thus, the government bureaucracy complicates the legal process involved in establishing a Cooperative Society. Under the Ministry of Work, the procedure to constitute a Cooperative Society is longer and more bureaucratic than to establish a society of social solidarity (Estados Unidos de México 1987). Cooperative societies, like societies of social solidarity, are not limited by membership, nor to a singly municipality or crop

(see SC CRAVI 1984; SC Paranguas 1984; and SC Valle de Parácuaro 1982).

Work Groups

Legally, as described in the above section on Ejido Unions, each ejido is supposed to designate a group of specialized horticultural producers, a Work Group, which then represents that ejido in soliciting planting permits. The ejido itself has legal autonomy, and can enter into financial operations, such as to establish a packing house, but the Work Group is expected to work within the ejido structure. According to legal restriction imposed by the Ministry of Agrarian Reform (SRA), in each ejido, there can only be one group of specialized producers.

However, Apatzingán producers have innovatively bypassed these legal technicalities, exploiting overlapping legal authority when necessary, ignoring it at other times. Within the Ejidal Unions, specialized work groups represent each ejido. When the Work Groups split over internal differences, political struggles or conflicts over who is to control the finances, one faction will leave and constitute another Work Group, within the same ejido, which then solicits planting permits independently. Thus, in reference to Figure 7.1, when there is a work group operating independently in the ejido of Nueva Italia, this means that these ejidatarios have split from the original work group, organized under the Ejido Union of Nueva Italia (see Grupo

de Trabajo Agrícola, #1 de Nueva Italia 1983). Now, two groups of producers, within the same ejido are vying for planting permits, water rights, credit access, and, invariably, the right to construct another packing house.

Thus, Work Groups legally exist only as sub-groups of ejidal unions and lack the juridical autonomy to enter into legally-binding contracts. According to legal counsel, if these Groups fail to repay credit loans, the U.S. company or Mexican enterprise has no legal recourse to recover the money (Daniel Sánchez Perez, personal communication, 1988). This has discouraged some splinter groups from establishing themselves as Work Groups; others find it no obstacle, and operate as autonomous commercial enterprises irrespective of the bureaucracy of legal restrictions. The Ministry of Agriculture, concerned about regional harmony, distributes planting permits to Work Groups belonging to the same ejido.

Other Associative Forms

Unregistered "Work Groups"

Other groups operate as informal work groups, completely outside the legal structure. In some cases, the group represents a group of wealthy, commercial producers who have carry their planting permits to plant and pack cantaloupe in the newer, more fertile regions in the marginal fringes of the valley. The group obtains planting and export permits through its parent association, yet operates independently in production, packing, and

negotiating financial contracts, theoretically allotting a percentage to the original Local Agricultural Association. This informal operation requires the acceptance of the parent associations; in other situations, political fighting within the association is so great that the directors will not condone such an arrangement.

As an informal group, the producers continue planting cantaloupe without the bureaucratic inconvenience of legally registering as a new associative form. Sources estimated 1-2 years to complete the legal procedure to register as an autonomous associative form, the easiest being the Society of Social Solidarity. Registering as an independent group would give the group greater flexibility to operate independently. The new group must operate as an economically viable firm; that is, one group's producer noted that they needed to increase the volume of fruit they were packing before they could leave the original association to establish their own organization.

Association of Collective Rural Interest (ARIC)

The Association of Collective Rural Interest (ARIC), was established under the Federal Law of Agrarian Reform, with the objective of organizing ejidatarios for agricultural production. Under the Ministry of Agrarian Reform (SRA), the ARICs constitute the next level of organization above the Ejido Unions; that is, the Ejido Unions in a particular region (see Figure 7.1) are members

of a regional ARIC which represents them in front of the Ministry of Agrarian Reform (SRA) and BANRURAL. The ARIC does not constitute an economic enterprise and, legally, cannot plant or commercialize directly. For the ejidatario, the primary service of the ARIC and its member Ejido Unions is credit distribution through the ejido structure. For this reason, the Bank sanctions all activities, and, unlike other associative forms, a bank representative must be present at all assemblies, both those of the ARICs and the Ejido Unions (Daniel Sánchez Perez, personal communication 1988).

Ejido Credit Unions

Historically, the ambivalent legal status of the ejido limited ejidatario participation in commercial agriculture in the region of Apatzingán. The ejidatario was not the subject of independent, direct credit because the ejido itself held collective title of agrarian rights. Thus, the ejidatario lacked the individual collateral, such as land or machinery, needed to secure a bank loan. The ejido itself was eligible for agricultural credit, but the ejidatario members had to be organized into "ejido agricultural societies" in order to solicit bank credit (Daniel Sánchez Perez, personal communication, 1988). The inherent problem lay in the credit society's collective responsibility for credit repayment. Each ejidatario member, although having paid his individual credit, remained financially responsible

for other members who failed to repay. Collective repayment problems undermined Bank support to cantaloupe production throughout the 1970s; this problem was a major factor in the Bank's decision to withdraw subsidized credit to ejidatario producers for cantaloupe production.

Comparative Analysis

The comparison of producer organization types examines both the organizational structure and operations. This classification system is developed from the original study conducted by local representatives, directives, and producers in 1987 (BANRURAL 1987a; 1987b; 1987c; and 1987d).

In terms of organization, producer organizations can be classified in four types: (1) agrarian, (2) administrative, (3) cooperative, and (4) mercantile (see Table 7.2). The agrarian category includes all associative forms that organize small producers in production, commercialization, and credit societies, as means of preserving land tenancy. These groups are protected and constituted under the Federal Law of the Agrarian Reform, the General Law of Rural Credit, and the Law of Agricultural Promotion. They are comprised of the following associative forms: (1) the ejido and the comunidad, (2) the Society of Rural Production, and (3) the ejido union (Banrural 1987b:9-10). This category is distinguished from others by the following characteristics: (1) the divisions are based on communal landholdings, (2) the organization covers all components of production and

commercialization, and (3) the objective is to organize small producers of the same socio-economic class, united primarily in terms of locality and kinship.

The second group, the administrative category, covers only those organizations of specialized producers who are dedicated to production of a specific crop. Also, their activity and jurisdiction is overseen directly by the state administration. This includes the major producer organizations in the valley of Apatzingán: (1) Local Agricultural Associations, and, according to some, should include (2) Regional Agricultural Unions and (3) National Unions of specialized producers. Currently, the regional unions (UARs) and the National Union of Horticultural Producers (UNPH) exist outside the state bureaucratic structure. They have generally adhered to state regulation, but, as discussed in Chapter Six, there have been differences about control over national commercialization and export of horticultural products.

Table 7.2. Categories of Producer Organizations, Valley of Apatzingán.

Agrarian: Ejido Union

<u>purpose</u>	to preserve land tenure
<u>membership</u>	<u>ejidatarios</u> , <u>comuneros</u>
<u>size</u>	
<u>activities</u>	all rural productive activities
	includes both specialty and food crops
<u>location</u>	localized unit, same <u>ejido</u> or community

Administrative: Local Agricultural Association

<u>purpose</u>	represent specialized producer group
<u>membership</u>	<u>ejidatarios</u> , private producers
<u>size</u>	
<u>activities</u>	specialized production of one crop
<u>location</u>	originally established one per municipality planting limited to within municipality

Cooperative: Cooperative and Society of Social Solidarity

<u>purpose</u>	cooperative distribution of work and income
<u>membership</u>	<u>ejidatarios</u> , private producers, non-producer
<u>size</u>	
<u>activities</u>	agricultural production, commercialization all commercial activities
<u>location</u>	not limited by geographic locality

Mercantile: Sociedad Anónima

<u>purpose</u>	commercial enterprise
<u>membership</u>	<u>ejidatarios</u> , private producers, non-producer
<u>size</u>	
<u>activities</u>	all commercial activities
<u>location</u>	not limited by geographic locality

Source: BANRURAL 1987a; 1987b; 1987c; and 1987d; and personal interviews, 1988; and Acts of Constitution, various years.

The third group, the cooperative groups, are organized as collective organizations, specifically for economic purposes, with no direct relation to the land. This sector includes both the Cooperative Societies and the Societies of Social Solidarity, at the local level, and the Federations of Cooperative Societies and Societies of Social Solidarity, at the national level. These groups fall under the General Law of Cooperative Societies (Estados Unidos de México 1988:94-168), the Law of Societies of Social Solidarity, and the Federal Law of Agrarian Reform.

Fourthly, the mercantile group is comprised of commercial organizations, where the firm is constituted to improve economic profits, not to resolve social issues. This group includes the sociedad anónima, and various forms of credit unions. The legislation which governs these organizations are the General Law of Mercantile Societies, the General Law of Credit Institutions and Auxiliary Organizations, and the General Law of Banking and Credit Service (Estados Unidos de México 1988:25-82). In most cases, these organizations operate in affiliation with other groups, such as the Local Agricultural Associations, fulfilling financial operations which the socially-based organizations cannot legally enter.

Conclusion

In conclusion, the proliferation of producer organizations arose over local competition for control of

producer organizations, guaranteeing access to cantaloupe production. Financed by external capital, mostly from the U.S. buyers, the organizations proliferated, from a few, very large, regionally powerful producer organizations, to 43 producer organizations, all competing over the same limited number of hectares each season. Specific organizational factors, associated with this transformation, have undermined the ability of local and regional authorities to manage both production and commercialization.

Increased Dispersal of Production Units

The problems began with the increased dispersal and division of limited hectarage among a greater number of inexperienced producers. Theoretically, this distribution addressed regionally important social issues. The transformation offered employment and income opportunities to small producers, redistributing agricultural income in a region where wealth has historically been controlled by a small number of wealthy commercial producers. Yet, the basis of this dispersal was political; that is, permits were distributed to producers without assessing the capability of the producer.

Zapatero a tus zapatos, carnicero a la carne,
carpentero a tus sillas.
(Shoemaker to your shoes, butcher to the meat,
carpenter to your chairs).

Melon producers should be producers of melon. They have brought in people outside who don't know melon production. You find this in the valley here, people who never in their life have planted melon, looking for ruin . . . We should

specialize the producers and support them to grow what is their strength . . .

(Administrator, Regional Union)

In this manner, the region and its cantaloupe producers lost control over: (1) quality of the fruit, (2) management of water, (3) management of commercialization, and (4) packing of the product (Daniel Sánchez Perez, personal communication, 1988).

Before, the growers planted, oh, maybe 100-200 hectares. That made it a lot easier, to go to the field, and it's all in one place. Now, if you want to look at 2 hectares, you have to go on a bumpy road for about 2 hours . . . And then, another hour to the next parcel . . . it doesn't work.

(Buyer)

Inability to Control Production and Commercialization

The proliferation of producer groups results in an increasing number of groups and producers competing over the same amount of limited hectarage. There have been numerous attempts to resolve the increasing decentralization of production groups (discussed in Chapters Eight), but, in all cases, these were limited to published documents and regulations, which were all subsequently ignored (see Appendices E and F).

Inability to Negotiate Sucessfully with U.S. Buyers

In all groups, producers and directives are aware that the decentralization, the fighting among themselves, reduces

their ability to deal effectively with outside groups, particularly the government and the U.S. buyers.

The government divides the producer to maintain total domination over the producer . . . to maintain everything totally disorganized. If the producer organizes, the Ministry will have to confront a people that can demand, that can make changes in the countryside.

(Lawyer, Apatzingán)

The problem is no one can agree on how many local producer groups should be allowed, or more accurately, which ones should continue to operate and which should be denied permits to plant.

Marginal Position of New Groups

The newer producer groups' marginal position undermines the Regional Union's control as these groups have no allegiance to, and often resent, the norms established by the Regional Union. In the newer groups, producers are willing to trade the voting rights and privileges for the opportunities to more effectively manage their organization internally. Since 1982, when the Regional Union first began to collect its quota at the U.S. border (as discussed in Chapter Six), the newer groups have protested that they should not have to pay dues to an organization which refuses them the right to participate.

To the Delegate Representative of SARH
To the UAR "José María Morelos"
To the General Public

We subscribe and ratify with our signatures, and we solicit in an attentive manner that you communicate to all the Local Agricultural

Associations, that we solicit participation with voice and vote in the Ordinary General Assembly to be celebrate on the 25th of this month.

If you do not grant us participation with voice and vote, we would appreciate if, before the upcoming assembly, you return to us all the paid quotas that have been taken from us in the past ten years. If you do not comply, we will see the necessity to make a public denunciation in front of the corresponding authorities.

(Signed by 11 Non-represented Producer Groups)
(Epoca: Voz del Valle, October 11, 1985)

The newer groups have repeatedly demanded the right to participate, and the Regional Union has repeatedly refused to comply. Yet, the Regional Union largely controls the planting and export permits, and, financially, it still remains in the interest of these groups to belong even if they are not allowed to participate.

The Regional Union recognizes that the established AALs and UEs, representing the majority of ejidatarios, would be outnumbered by the new groups (see Table 7.1). Members of newer associations maintain that the Regional Union will eventually have to change, that it cannot maintain control over local groups anymore.

Stratification of New Producer Groups

As a rule, these newer societies consist of small groups of wealthier, experienced producers who left the larger associations in their frustration over internal political corruption and the associations' inability to improve and more effectively manage production. These are

the organizations which have the resources and the flexibility to plant with hybrid seed, to plant in compact areas, to initiate technical changes in crop management in efforts to increase productivity. Also, these producers are the more listo, more ready, and have generally the economic resources to try new technology, explore new markets, and experiment with other horticultural crops.

Rival Organizations

Many of the new groups pertain to the rival regional union, the Ejido Union of Horticultural Producers (UPEH) (discussed in Chapter Six). The new Union solicits hectareage and export permits directly from the Ministry of Agriculture and Water Resources and operates completely outside the jurisdiction of the established Regional Union. The UPEH's capacity to threaten the UAR's regional control depends on its ability to finance member groups. Additionally, new groups may decide to remain within the UAR to more easily secure planting and export permits. Despite the increasing threat, the Regional Union remains the more powerful in the valley and maintains the closer ties with the Ministry of Agriculture.

Internal Corruption

Internal problems in the organizations also reduce the ability of member producers to hold their directors accountable for financial dealings. The work groups presented disturbing findings to the general assembly of

producers in June, 1987, in analyzing the producer census for each producer group: (1) member producers who were not proprietors of land or water resources, that is, investors, (2) member producers who had not planted cantaloupe for three consecutive seasons, and (3) no mention of many of the producers who had been receiving planting and irrigation permits for the past three years, supported by registered permits from their respective producer groups (BANRURAL 1987a). Government efforts to initiate internal reforms have been unsuccessful, since technically, neither the Ministry of Agriculture nor the Ministry of Agrarian Reform have the right to intervene in the internal operations of associations or unions. Ultimately, it is the responsibility of producers themselves, or the regional union, to manage the internal affairs of the producer organizations.

CHAPTER EIGHT

HISTORIC STAGES AND CONFLICT OVER CRITICAL RESOURCES

Introduction

Many studies of agribusiness commodity systems predict increasing land and wealth concentration over time, development of conflictive relationships between labor and management, and increasing complexity of production technology (see discussion in Chapter Two). Apatzingán has not witnessed the same degree of land or capital concentration due to a relatively successful government land reform program. The conflictive relationships that exist locally occur between the producer and buyer, not labor and management. Nor has the production technology changed substantially in the 30 years that the region has produced cantaloupe. In Apatzingán, the agricultural system has failed to fully transform in terms of land, labor, or capital relations. The state and local alliances with the state can critically affect the integration of peasant economies into a capitalist economic system (see theoretical model presented in Chapter Two).

The Mexican government and local producer associations, through their alliances with the state, actively shaped

local development of commercial agriculture in the valley of Apatzingán. Still, local organizations continue to operate within the conditions imposed by an external market. As market conditions changed and the Mexican government withdrew critical financial support, the U.S. buyers reasserted their control. In Apatzingán, state support and alliances have been critical in maintaining any degree of regional autonomy in front of foreign investment and the international market. Historical analysis provides: (1) insights into local level strategies for negotiating both with the state and foreign investors, and (2) documentation of the mechanisms used by state and foreign investors to co-opt local level organization. Further analysis is needed to assess the short and long term impact on the commodity system's performance. The next chapter, Chapter Nine, uses production data from the 1987/88 season in an effort to measure these impacts.

The National Union of Horticultural Producers and the buyers both identify Apatzingán as "problematical," due to local level corruption, local disregard for production and commercialization "norms," and producers' disregard and distrust of any external authority. Apatzingán producers and directors of local producer groups do not obey the recommendations which authorities and U.S. buyers have determined as the "norms" for cantaloupe production and commercialization. Local producers and directors sign

proclamations, agree verbally with the authorities, and then, in actual practice, continue to sabotage all regulatory efforts. Authorities assert that this "chaos," the disrespect for accepted norms, has increased with the number of producer organizations (discussed in Chapter Seven) and now threatens cantaloupe's continued production in the valley. Seen within a historical perspective, corruption represents a manifestation of local level strategies, both by producers and local intermediaries, to defend their own interests within this commodity system.

The cantaloupe commodity system in the valley of Apatzingán has evolved through distinctive periods from 1968-1988. This section examines conflict both among local organizations and between local organizations and external groups for control over specific resources: (1) production and producer associations, (2) capital financing, (3) permits, (4) packing, and (5) markets. Specific historic periods characterize the development of cantaloupe production in the valley of Apatzingán, indicated by shifts in control over these critical resources: (1) 1950-1967, when U.S. buyers controlled the system, (2) 1967-1970, when the Mexican government intervened, (3) 1970-1980, dominated by strong local producer organizations, (4) 1980-1987, marked by the decline of local control, and (5) 1987-present, denoted by unsuccessful local efforts to regulate production and commercialization and the return to U.S.

buyer control. Figure 8.1 presents a general overview of the periodic shifts in control over critical resources; the historical analysis draws from this model. These periods depict local organizational efforts to confront the monopsony situation in this commodity system (see Chapter Six). Over time, local forces have increasingly lost the autonomous capacity to control production and commercialization.

U.S. Buyers Control the System (1950-1967)

Production and Producer Associations

When the U.S. distributor companies initially moved into the valley of Apatzingán, they directly managed production, planting on private or rented ejido land. The companies worked with primarily with private producers, planting in compact areas of 100-200 hectares. Buyers recall that production management was easier, quality better, and there was a much lower use of chemical pesticides (Joe Murguía, Daniel Ramirez, personal communication 1988). A small group of elite, large landholders comprised the Apatzingán cantaloupe producers, and the majority of ejidatarios did not participate in production.

From 1955-1967, buyers and large producers successfully limited area annually to approximately 3000 hectares, basically through a "gentleman's" agreement. Some of the

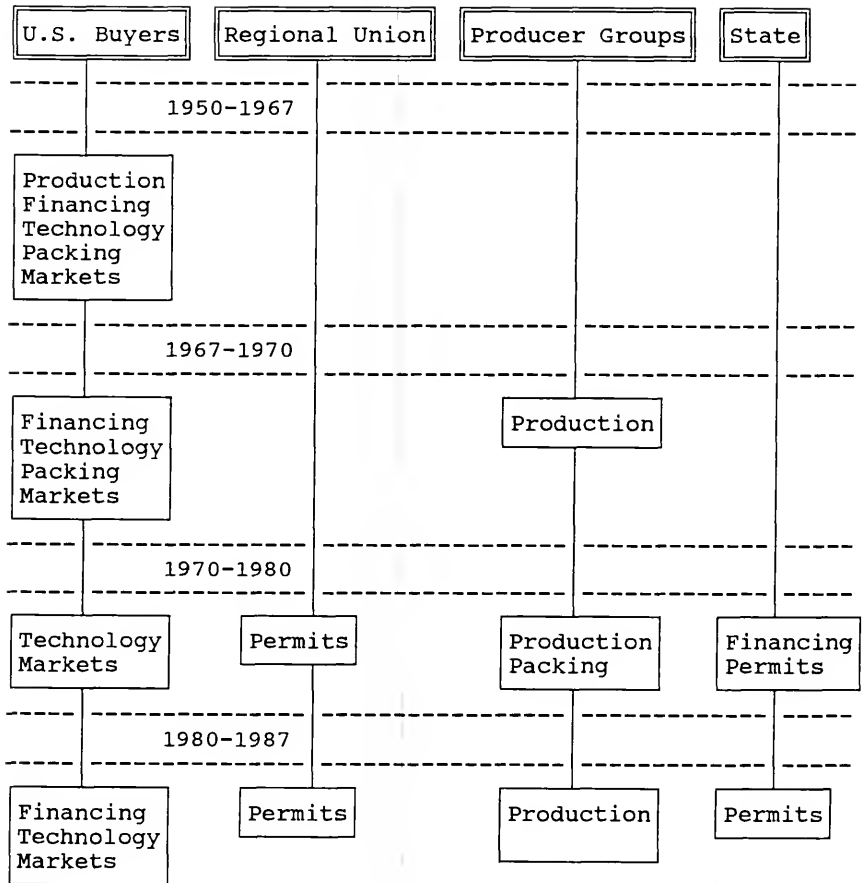


Figure 8.1 Control over Cantaloupe Production and Commercialization, Valley of Apatzingán, 1950-1988.

older buyers, who have worked in the region since the late 1950s, claim that there were fewer overproduction problems, and that the buyers usually purchased all production, even from those producers with whom they had no prior contract. Producers remember several bad seasons, where overproduction resulted in an immediate and severe decline in market prices, but they themselves attributed regional economic disasters to local overproduction.

Right from the beginning, there were problems of overproduction. There wasn't a large market for export. One season, there would be very good results. The next cycle, everyone was saying, "let's plant, right?" Thus, instead of planting, let's say 5000 hectares, they planted 10,000. And what happened? They had to throw out the fruit.

(Ex-director, Regional Bank)

Capital

The U.S. companies financed most of the regional production, although some wealthier producers had the capital to self-finance. The Mexican government saw cantaloupe as a risky investment and did not extend production credit for cantaloupe during the early years. The U.S. market's volatility and high costs of production/hectare discouraged private self-financing, but some wealthier producers invested personal capital.

In general, the U.S. companies financed 80% costs of production, leaving the producer to invest the initial 20% for land preparation (Abel García, Daniel Ramirez, personal communication, 1988). This credit arrangement required the

producer to deliver the entire harvest to the company's packing house. The U.S. companies provided Apatzingán producers with seed, fertilizers, chemicals, technical staff, and graders to select fruit quality, all based on U.S. production technology.

Buyer and producer contracts were verbal agreements, with no signed written contract, although both parties generally assumed that the buyer would purchase 100% of the fruit. Financing was arranged on an individual basis with each producer. Those larger producers who self-financed production could sell their harvest to the highest bidder. Some independently established direct contacts in the U.S. market and sold fruit on a commission basis to U.S. brokers, not only in Texas, but also in the Chicago, Philadelphia, and New York terminal markets.

Permits

During this period, there was no formal regulation in area planted, timing of planting, nor volume of fruit exported. The distributors, in non-written gentleman's agreements, controlled the volume so as not to flood the U.S. market during the winter months.

Packing

The U.S. distributor companies owned the packing houses, and the company's representative oversaw local operations. Credit contracts stipulated that the producer deliver 100% of the harvest to the respective packing house.

Most old-timers recall that the system ran smoothly, the quality of production was excellent, and that there was little antagonism between buyers and the small elite group of producers who had been granted access to cantaloupe production. During this period, 1955-1967, cantaloupe was shipped by rail in refrigerated cars, as the main highway out of the valley was not constructed until 1955. The packing houses were centrally located in the municipality of Apatzingán, in close proximity to the rail station. As there were only 6-8 major packing houses, the buyers could readily coordinate daily packing with rail shipment.

The Mexican State Intervenes (1967-1970)

The Endrin Case

During the 1966/67 season, the United States Department of Agriculture (USDA) border inspectors identified traces of Endrin, a strong insecticide used in cotton, in some Apatzingán cantaloupe shipments. Facing the threat of losing an entire regional harvest, the Ministry of Agriculture forced producers, who had planted on contaminated land, to plow their crop without harvesting. Endrin, a chemical insecticide produced by Shell Chemical Company, was widely used in the valley on cotton and had also been previously accepted by the U.S. Food and Drug Administration for foliar application in cantaloupe. USDA authorities never concluded if the Endrin detected was from direct applications on cantaloupe foliage or chemical

residuals left in the soil from cotton production. Locals claim that many farmers had unknowingly planted on land previously in cotton. The USDA punished them unjustly since the agency had previously accepted the insecticide (Abel García, Daniel Ramirez, personal communication, 1988). The result was a regional economic disaster, as much fruit was rejected at the frontier and many fields destroyed. At the time, local producers and representatives from the UNPH, SARH, and several Mexican banks, held meetings, all with the intent of organizing local farmers so that this economic disaster would not occur again.

Various editorials appeared in local newspapers, most attributing the disaster to a conscious plot by the gringos. Explanations ranged from allegations of an economic war between two major U.S. cantaloupe buyers, a war between the two insecticide companies, Shell and Belsicol, over Endrin, to United States' efforts to punish Mexico because it refused to break relations with Cuba (Epoca April 2, 1967). This incident set the historical tone for confrontational relations with the U.S. buyers; local producers view with suspicion any U.S. restrictions of cantaloupe export, despite U.S. claims of market or technical problems.

Production and Producer Associations

After this regional disaster, the Mexican government encouraged the formation of local cantaloupe producer associations to protect the interests of local producers.

The Local Agricultural Association (AAL) of Apatzingán was first established in 1967, and has dominated cantaloupe production in the valley for the past 20 years. From the beginning, ejidatario participation was high; of the 3500 hectares planted the first 1967/68 season, 70% were in the hands of ejidatarios. The AAL Apatzingán issued a document stating that no one producer would have more than 20 hectares (Epoca October 29, 1967).

As the only association in the valley, AAL Apatzingán directors exercised great control over production and thus greater bargaining power with the U.S. buyers. The AAL Apatzingán contracted locally controlled packing houses for the fruit, arranged rail transport, and established contracts with U.S. companies in the United States in order to market by commission. The directors intended to organize all regional producers into one single, large organization to confront what locals viewed as the U.S. buyers' "mafia."

Yet, from the first 1968/69 season, other local groups began to splinter off, in Chilatán and in Nueva Italia (see Figure 8.2). As some producers described, the "jealousy" began from the beginning, and local elite of other municipalities, including Nueva Italia, Tepalcatepec, Parácuaro, each wanted their own organization to directly manage cantaloupe packing (Abel García, personal communication, 1988). The new AALs argued that fields in the outlying municipalities were located at too great a

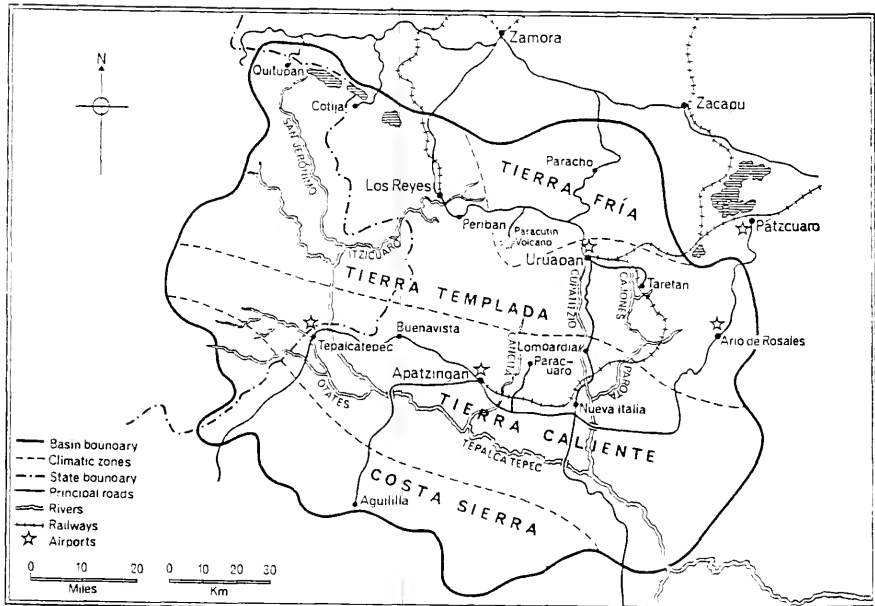


Figure 8.2. Location Map of Original Local Agricultural Associations, Valley of Apatzingán.

Source: Regional Union "José María Morelos", Apatzingán, Michoacán.

distance to carry the fruit to packing houses in the municipality of Apatzingán. In rebuttal, AAL Apatzingán producers argued that these associations, dominated by a few, large private investors, were not "real" producer organizations and existed only to earn profits from the commercial packing of cantaloupe.

When talks were initiated for the programming, the CDA did not act directly and while they were arguing, the producers were planting and planting.

In the region of Nueva Italia, in the capital of (U.S. buyer), they were financing production out of the program. For the Yankee merchants, it is beneficial to overproduce and plant chaos among the Mexican producers. This is how they control the prices.

(Anonymous 1978)

There were accusations that some U.S. buyers financed the other associations as a means of dividing local organizations, encouraging overproduction, and depressing local cantaloupe prices. These new associations solicited and received an additional 1500 hectares from the Agricultural Directive Committee (CDA).

From the beginning, local groups and the state conflicted over agendas. The Agricultural Directive Committee (CDA), as well as the Ministry of Agriculture (SARH), did not want to confront the conflict among local groups; it was easier to simply distribute more hectares. Also, the CDA recognized the right of other producers to enter into cantaloupe production. The newer groups argued

against the AAL Apatzingán's efforts to monopolize cantaloupe production and commercialization in the valley. Local groups took advantage of the CDA's flexibility and continued to establish new groups. By 1969, with five local agricultural associations, producers established the regional union, the Regional Agricultural Union "José María Morelos" (UAR 1969). These associations brought in more producers, and, increasingly, the associations began to limit the number of hectares allotted per producer.

Capital

Many large, commercial cantaloupe producers shifted into other commercial crops, primarily perennial fruit trees, claiming that cantaloupe production was no longer commercially profitable on less than twenty hectares. They also argued that profits were greater in direct marketing in the United States, by selling on commission to distributors in Los Angeles, Chicago, or New York. Producers earned lower profits in selling their harvest locally to representatives of the U.S. distributor companies.

The increased participation of ejidatarios forced the AALs to face new problems of credit distribution and payments. Ejidatarios, lacking independent capital financing, needed cash payments weekly, starting with land preparation. If ejidatarios did not receive timely cash advances, they could not complete the production activities required. Also, they could not wait until the entire

regional harvest was liquidated for repayment, several months after the season's end, as is the customary practice in selling by commission. Instead, ejidatarios required immediate payment upon delivery of their fruit to the packing house.

Permits

The regional Agricultural Directive Committee (CDA) was comprised of representatives from the Ministry of Agriculture (SARH), the Rio Balsas Commission, and the Regional Union. At this time, the CDA, as a regional authority, began to regulate the number of hectares planted and volume of fruit packed. The CDA's objectives were to maintain regional control over production volume and higher prices for local producers.

Still, the state agencies, by necessity, responded to local demands by new producers. Newly-established AALs demanded planting permits for cantaloupe, even after the CDA had already been determined seasonal limits. The CDA acted as a regulatory board, not a police agency, and new AALs often planted hectares out of planting sequence, according to the AAL's individual economic operations.

From the beginning, overproduction periodically saturated the U.S. market, dropping local prices drastically. During the 1968/69 season, a local alliance of AALs withheld all regional cantaloupe shipments to the United States for ten days to increase the market price

(Epoca, January 23, 1969). Several points are critical during this period. First, although AALs differed among themselves at the local level, beyond the region, the AAL directors recognized the U.S. buyer as the common enemy and united accordingly. Second, each AAL still controlled a large percentage of total hectares and all the packing houses. Third, the AALs, by controlling the packing houses, could sanction local producers who did not comply. In the valley, a producer who did not comply could not find a packing house to accept his fruit. The small number of AALs and their autonomous control over production and packing enabled more successful negotiation with outside groups.

Packing

In the most important power shift during this period, the AALs assumed local control over the cantaloupe packing houses. After the first seasons, U.S. buyers relinquished control over production although retaining ownership of the packing houses. As more AALs were established, the buyers could, as one said, "see the handwriting on the wall." Those who worked during this period complained bitterly that the companies and private buyers were literally forced to sell their privately-owned packing houses to the AALs. A range of tactics emerged, from the Mexican government's changes in the tax structure, to unknown locals slashing tires of those trailers leaving the U.S. buyer's packing house. Buyers resented the Mexican government's active

intervention in pushing them out, contending that they had always treated their producers fairly. Many of the early large-scale commercial producers left the region at this time, primarily for Colima and Guerrero, where they continue to produce and export cantaloupe to this day.

Markets

As discussed above, the entrance of ejidatarios into cantaloupe production presented problems for direct marketing. Ejidatarios required immediate payment upon delivery of their fruit and could not wait several months until the cantaloupe shipments were liquidated by the U.S. broker, as is customary in selling by commission. In its intermediary role, during the 1967/68 season, the AAL Apatzingán paid a higher price to its producers than the association was able to obtain on the U.S. market. By the season's end, the AAL Apatzingán tried unsuccessfully to collect from producers a percentage of earlier payments. At other times, U.S. companies were slow in liquidating their shipments at season's end; the newspapers contain references to several companies which failed to pay months after the season had ended (Epoca May 4 and 25, 1969).

Strong Local Agricultural Associations (1970-1980)

Production and Producer Associations

The number of AALs growing cantaloupe continued to grow, as local groups from every municipality applied to establish an AAL, each with its own packing house.

Ejidatario membership expanded, since the Mexican government had extended cantaloupe credit to ejidatarios. As the number of producers increased, the average number of hectares per producer decreased. There was a shift from a small number of large, elite producers planting great expanses of area to large numbers of ejidatarios planting cantaloupe on an average 3-5 hectares each, dispersed among their respective ejidos.

In some AALs, directors carried the AAL's planting permits to plant as a select group, among 6-8 producers, in large compact areas of 100-150 hectares. Ejidatarios, although technically members on the AAL census, lacked financing and could not use their permits. When ejidatarios began to claim their rightful permits and to exert more authority in the associations, some of the larger commercial producers left cantaloupe production completely, shifting into the private ownership and management of the packing houses, wherein lay the greatest profits.

Ejidatarios also began to assert themselves in the AALs' internal political operations. Several associations established internal by-laws whereby the membership of the directive committee would alternate between private producers and ejidatarios (see AAL Apatzingán 1967, and Epoca May 25, 1969). Other sources claim this division of political power between private producer and ejidatario existed in name only, that many ejidatarios, as new and

inexperienced members, voted for a director solely because he was an ejidatario. Membership in the AALs expanded dramatically, in some cases, for political reasons outside of cantaloupe production needs. At this time, the Ministry of Agrarian Reform (SRA) supported the establishment of the Ejido Unions (see Chapter Seven), and regional conflict over control of the producer associations increased.

Some directors of AALs and UEs also held political office in local and regional divisions of the National Peasant Confederation (CNC), and they gained political support by increasing ejidatario membership in the cantaloupe producing organizations. Political decisions impacted on cantaloupe production technology when many non-specialized, unskilled producers began to grow cantaloupe for export. The Ministry of Agriculture (SARH) argued for a new census of specialized horticultural producers, but state agencies lacked the legal authority to directly intervene in the AALs' internal operations.

As discussed in Chapter Three, Apatzingán ejidatarios had historically participated in commercial agriculture, both in cotton production and in the collective ejido of Nueva Italia. Initially, ejidatario participation in cantaloupe, as in cotton, existed in name only; although the ejidatario's name appeared as producer, he actually rented the land to a larger, wealthier financier. However, National Bank credit to ejidatarios fundamentally changed

this practice. As ejidatarios gained independent credit access, outside the direct control of AAL directors, ejidatarios began to reclaim land previously rented to private producers to plant cantaloupe.

Planting units became more dispersed, as ejidatarios preferred to plant in their respective ejido. The individual AALs found it more difficult to control individual producer timing and location of planting. Different AALs often planted within the same ejido, and the disorganization in planting increased (see discussion in Chapter Five). Local technicians, directors, and regional authorities severely criticize this shift in the organization of production, arguing that the shift led to (1) poorer application of chemical inputs, (2) less investment of time, money, and care in production and ultimately (3) decreases in yields.

Capital

The Rural Credit Bank (BANRURAL) began financing ejidatarios for cantaloupe production, and the AALs subsequently expanded ejidatario membership. In losing control over financing, the U.S. buyers also lost the control to force producer to deliver his fruit to the buyer's packing house. The Mexican government, by extending credit to ejidatarios, thwarted foreign control of the production end of the cantaloupe commodity system. This shift also guaranteed local groups more control over

production and bargaining with the U.S. buyers. Without national financing of cantaloupe, the Apatzingán AALs would never have increased ejidatario membership nor gained the regional economic and political force they exercised during the 1970s. The buyers remained in the valley as buyers only, and many of the early financiers left.

National bank financing expanded to cover 80% of the area planted in cantaloupe (5000-6000 ha./season) by the middle 1970s. In its dealings, BANRURAL required that each producer should be: (1) a member of a registered local producer group, (2) on SARH's list of irrigation users in the system, and (3) on the registry as a producer with land.

Credit packages consisted of cash and inputs, which the producer obtained at the Bank's warehouse. The Bank determined the cash amount for each operation based on its own estimates of costs of production, including the average rate of inflation. Producers state that bank estimates were often lower than actual costs of production, such that the producer was forced to invest some of his own capital. The Bank, due to government restrictions, submitted cost estimates at the end of the previous season. Once farmers actually initiated the work, to do land preparation, for example, cost were usually higher than originally estimated (Producers, personal communication, 1988).

As described, BANRURAL's financing increased local bargaining power in negotiations with U.S. buyers. Still,

BANRURAL was primarily concerned with recuperating its capital investment, particularly from ejidatarios. The Bank required a letter of credit from the U.S. distributor, guaranteeing payment for a certain amount and drawn on a U.S. bank. As a rule, U.S. buyers make weekly payments for fruit purchased throughout the season. The AALs depend on this flow of capital, both to repay credit and to continue daily operations of their packing houses. BANRURAL also included clauses which stipulated that the buyer had to buy a certain total volume of the association's fruit, irrespective of market prices and individual firm decisions. These clauses guaranteed that BANRURAL recuperated its capital invested in the producer; beyond the stated amount, contracts did not specify that the buyer had to continue buying the AAL's fruit.

With financial control over production, BANRURAL could negotiate better terms with the U.S. buyers. For several years, 1978-1981, BANRURAL actually extracted a guaranteed bottom selling price for producers, and in the 1970s, the alliance of BANRURAL, the Regional Union "José María Morelos"), and the Ministry of Agriculture required U.S. distributors to furnish a letter of credit drawn on a U.S. bank. If the buyer failed to make a timely payment, the Bank could draw the prescribed amount on the letter of credit, enabling the AAL to continue its packing house operations (Moctezuma Santamaría, ex-director, Regional

Bank, personal communication 1988). Also, if a U.S. company did not honor a contractual agreement, BANRURAL, in alliance with the Ministry of Agriculture and the Regional Agricultural Union, denied export permits to the company the next season, effectively shutting the company out of the valley. Administrative heads of the local offices of BANRURAL and the Ministry of Agriculture exerted strong political and economic power during this period.

BANRURAL financing also altered local elite control over the producers. In obtaining credit through BANRURAL, ejidatarios technically obtained credit outside the organizational structure of the AALs and Regional Union. Credit was distributed to individual producers, and, theoretically, the individual ejidatario was responsible for repaying credit. In practice, BANRURAL arranged repayment with the respective AAL, which deducted the amount owed before returning the net profit to the producer. BANRURAL worked as an intermediary between the U.S. buyers and the local AALs. U.S. buyers often arranged production contracts with BANRURAL. Local rumors abounded that both the Bank director and the head of the commercialization division of the Bank earned commissions from the U.S. buyers and AALs for arranging contracts. Bank officials denied these allegations, contending that a committee, composed also of representatives from the producer groups, was responsible for arranging the contracts (Castro 1981).

Changes in control over financial capital enabled local groups to more effectively negotiate with U.S. buyers. However, for the average ejidatario, BANRURAL financing did not alter the producer's relationship with his respective association or the external market. BANRURAL moved into the role of an intermediary, as an economic broker between the U.S. buyer and the AAL, a position similar to that occupied by the local AALs.

Permits

During this period, the Mexican government established the first Ejido Unions (see discussion in Chapter Seven). In establishing the Ejido Unions, the government encouraged ejidatarios who were already members of the AALs to form their own organizations. Differences arose over the planting permits for cantaloupe. According to some, the planting permit belonged to the producer as a specialized cantaloupe producer; that is, when the ejidatario member left to join a new Ejido Union, he had the legal right to carry his planting permit. When a group of ejidatarios left, the Ministry of Agriculture (SARH) issued a document, noting that the group had left the parent AAL with a specified number of hectares. With these permits, the new Ejido Unions (UEs) essentially carried off the hectares of the Local Agricultural Associations (AALs). Others maintain that the producer, as a member in a specialized producers' organization, had the right to plant only as long as he

belonged to the AAL; that is, the permit belonged to the legally registered Association, not the producer. The AALs protested, but the Ministry of Agriculture (SARH) supported the Ejido Unions and redistributed hectarage in favor of the ejidatarios. The AALs, themselves dependent on SARH for both planting and irrigation permits, could not confront the Ministry at the risk of jeopardizing future production.

Market

During the 1960-70s, the local associations and the Regional Union initiated several efforts to expand cantaloupe exports to markets outside the United States. Commissions of the Regional Union made initial investigations and shipments to markets in England, France, and Japan (Epoca December 12, 1971, February 24, 1974, March 31, 1974, March 26, 1976, September 30, 1977, and September 18, 1981; and Abelardo Gaona, personal communication, 1988). In all cases, the initial shipments did not materialize into extended contracts for several reasons. First, the required air shipment of cantaloupe increased consumer prices dramatically and discouraged market expansion. Second, brokers in these markets preferred to purchase fruit by commission and did not want to finance production. The specific needs of ejidatarios discouraged sales by commission. Third, local and regional directors' efforts to search for new markets were often limited to 1-2 shipments with sufficient marketing research to maintain continued

contacts. Fourth, several bad experiences, both with foreign brokers and directors of some local associations, discouraged other local groups from exploring new markets.

One time early in the history we organized to sell directly. Then the companies worked with some of the associations. . . It's a tragedy that I can't say because I would be a very bad Mexican. . . I can't tell you the reality because I'm not a bad Mexican, I can't speak badly of my own people.

(Producer)

Finally, the Bank, in its financing of ejidatarios, discouraged the AALs and UEs from selling fruit by commission to foreign brokers. BANRURAL, in order to recoup its investment, preferred that ejidatario borrowers sell their harvest at a lower price at the packing house, with the assurance of receiving payment at point of delivery.

During the 1970s, U.S. cantaloupe transport to trailer trucks since the trucking industry responded more rapidly to periodic fluctuations in volume. Rail transport had to be contracted months in advance, and, with the increased number of groups and individual producers, neither the AALs nor UEs could project their harvested volume in advance. Producers, directors, and buyers recall several economic disasters in trying to coordinate rail shipments with delivery of fruit.

Decline of Local Control (1980-1987)

Production and Producer Associations

Between 1975-1985, the number of associations increased from 12 to 37 in total. In 1979, representatives from both

the UAR "José María Morelos" and the AALs met with representatives from different state agencies, such as BANRURAL, the Ministry of Agriculture (SARH), and the Ministry of Agrarian Reform (SRA), to issue a declaration forbidding the registration of more AALs (UAR 1979). As detailed in Chapter Seven, producer groups continued to be established under different ministries. The Ministry of Agriculture (SARH) continued to grant planting and export permits to new associative forms, despite the protests of the Regional Union and its member AALs.

The Case of the Missing 13,000,000 Pesos

In 1978, the treasurer of the Regional Union solicited a reimbursement of 13,000,000 pesos (then equivalent to \$572,183 U.S.) from the Ministry of Banking and Public Credit (SHCP) on a 7% ad valorem tax previously assigned to all cantaloupe exports from the Valley of Apatzingán. Under the Federal Law of Agrarian Reform, the Mexican government cannot tax the harvested product of ejidatarios (Estados Unidos de México, 1987). The Ministry returned the money to the National Union of Horticultural Producers (UNPH), which, in turn, passed it on to the Regional Union "José María Morelos." In 1980, several producer groups pressured the Regional Union to determine what had happened to the money. The UAR responded that the sum had been deposited in a social fund for all UAR members, although accounts of the disbursement could not be produced. In August, 1980, 306

ejidatarios of nine major producer groups, including AALs and UEs, invaded the Regional Union office headquarters and occupied the offices for 60 days. Ejidatario representatives travelled to the Ministry of Agriculture (SARH) offices in Mexico City, demanding that the government intervene on their behalf. In October, the General Assembly of cantaloupe producers met, and seventeen of twenty-one member associations voted to censure the regional president and demanded an audit of the Union's financial transactions (Epoca August 29, September 5, September 26, and October 10, 1980).

The controversy continued, and in June, 1982, the Regional Union had still failed to present an accounting of funds. The situation was eventually resolved by distributing roughly 1,000,000 pesos (then equivalent to \$44,014.08 U.S.) but to only one AAL, whose ejidatario members had the benefit of legal counsel to file the petition required to recuperate the funds. The other producers never obtained a disbursement.

Producers and directors alike recall this drawn-out event vividly, but each group interprets the situation differently. Producers remember this as another example of why they can not trust their own local representatives, particularly any associated with the Regional Union. The "broker" system in Apatzingán does not contain the mechanisms whereby ejidatarios and other producers could

assure that local intermediaries would be accountable to their constituents. Individual producers could only guarantee benefits from the return of this sum by confronting local authorities and forcing individual disbursement. Their lack of trust was based on previous experience and knowledge of their directors' operations.

From the perspective of the National Union of Horticultural Producers (UNPH), this sum represented a "social fund," an opportunity to use the money to benefit the region collectively. UNPH representatives maintained the UNPH never intended to reimburse each ejidatario individually, as there was no means to insure that each ejidatario would receive the value proportional to the volume of fruit each originally produced. UNPH representatives presented a program, detailing credit fund and repayment distribution, but this program was never implemented when local ejidatarios demanded individual return of the money (Alonso Lopez González, UNPH director of Organization and Promotion of Affiliates, personal communication, 1988). Once divided among individual producers, the distributed quantity failed to produce anything tangible. UNPH representatives attribute the disturbance to the confrontative and critical nature of Apatzingán producers. The authorities ignored that the ejidatarios' distrust of local intermediaries and any

collective efforts involving money were based on previous experience and knowledge of the existing local system.

Capital

By the early 1980s, BANRURAL reduced financing of cantaloupe production to ejidatarios, citing problems of repayment, risks, and shifts in bank priorities to basic food crops. During the early 1980s, at the national level, the Mexican government initiated the SAM program, designed to increase national production of basic food crops (see discussion in Chapter Two). Following SAM's demise, the Mexican government continued to concentrate bank credit in grain crop production. Also, as the number of packing houses increased, ejidatario credit repayment became more of a problem. In general, the AAL deducted the individual producer's credit debt from the total profits on fruit delivered, repaying the Bank before distributing the net returns to the producer. To avoid credit repayment, and thus net more money, the ejidatario could carry his fruit to another packing house which had not financed his production, thus earning straight cash for all fruit delivered (Moctezuma Santamaria, Ex-director, Regional Bank, personal communication, 1988). Some of the newer packing houses admitted a greater percentage of fruit to the export market (see discussion in Chapter Six). The producer could, theoretically, repay credit with his member association and

still have cash left over. Adhering to the prescribed regulations netted lower profits for a season's work.

Others cite increasing production costs as the critical factor, reducing the Bank's profit margins. Risks inherent to cantaloupe production, combined with disorganization in production (see Chapter Five) and local competition among producer groups (see Chapter Six), made cantaloupe a risky investment. In 1980, when the National Crop Insurance Agency (ANAGSA) withdrew crop insurance for cantaloupe, BANRURAL began to reduce financing. Without crop insurance, the Bank could not guarantee repayment in the event of natural disasters or market problems.

Also, in several situations where the Bank extended credit to ejido cooperatives for cantaloupe production and machinery purchases, the cooperatives mismanaged funds, declaring bankruptcy within a few years. When credit was extended for political reasons, the government did not analyze the financial viability of these credit unions.

By the second year, _____ were bankrupt. The members, they had never seen so much money. . . They themselves began to buy trucks, houses, throw some wild parties . . . They didn't program their investments . . . lent money to everyone, and with this, died quickly.

(Director, Producer Group)

The Mexican government, in not analyzing the financial viability of these institutions, undermined the opportunity at the local level to develop and support serious, viable

agricultural credit unions which might have served as alternatives to the Bank in later years.

Permits

As detailed in Chapter Six, permits are required at every stage in the production and commercialization process; however, Apatzingán has always known trafficking in permits. Many of the newer groups either lacked resources or commitment to production, instead renting their planting permits to other producer groups. Second, many of the older AALs (see Figure 8.2) had planted in the same areas for years and faced increased pest problems and reduced yields (see Chapter Five). Recognizing this problem, the Ministry of Agriculture (SARH) granted these AALs legal permission to plant in other municipalities, in the margins of the valley, on new land where yields would be higher. The ejidatarios in these AALs often lack the financial resources or mobility to shift their production to outlying areas. As a result, some AAL directors carried the permits and planted themselves, retaining all profits, or, in others, rented the permits to richer financiers of new producer groups.

This wasn't the case with Apatzingán or Nueva Italia, they continued planting their own hectarage. It began with the others. It wasn't just the viruses, the diseases, it was the politics. If you can't get credit for your own area, better to get credit with fewer people and plant in Churumuco.

And it wasn't because the producers, the members didn't want to plant. It was just easier to take the money and more profitable to go to Churumuco with 4-5 people. A director could plant for

himself, but carry with him all the permits of his group. . .

(Producer)

As previously discussed, AALs and producers disagreed over legal rights to planting permits. SARH continued to honor the individual producer's or director's right to carry the planting permit to a new producer group. This resulted in the division of fewer hectares among an increased number of producer groups.

Markets

In specialized projects, the Mexican government intervened directly in the export of cantaloupe but with little success. In 1975, the government established a commercial parastate to by-pass the U.S. buyers in the valley, instead directly marketing to the distributor companies in the United States. Problems arose immediately. First, the buyers, as employees of the same U.S. distributor companies, retained the confidence of their companies more than any new Mexican enterprise. The U.S. companies preferred to buy through their own representatives than an unknown and unproven firm. Second, the AAL directors earned their individual profits in the packing of cantaloupe, through the maquila (as discussed in Chapter Six). Rerouting the commercialization process through a parastate company reduced the directors' profits and undermined their control over their own producers. Thirdly, the parastate

assumed local producers would deliver their fruit to the Mexican company yet offered no independent financing (Daniel Sánchez Perez, personal communication, 1988). Finally, the agency intended to stabilize regional prices. The buyers, operating within a monopsonistic market, earned greater profits by working with unorganized AALs who overproduced, thus depressing local prices.

Later attempts to expand into other foreign markets continued to be unsuccessful. In 1985, FROMEX, a newly established parastate company, attempted to export cantaloupe to Canada, bypassing the U.S. brokers. In response, according to local sources, the U.S. buyers shipped cantaloupe, purchased in Apatzingán, to Canada at a lower price than the Apatzingán AALs could offer, flooding the Canadian market, depressing the Canadian consumer price, and undermining Mexican efforts to directly enter the Canadian export market. Apatzingán groups only fulfilled the initial contract with the Canadian company, losing money in the effort, and could not continue direct marketing.

Return to U.S. Buyer Control (1987-present)

Concerned about regional loss of control over planting and packing, the Ministry of Agriculture (SARH), BANRURAL, the Regional Union, and directors of all local producer groups convened in May, 1987, to commission studies and policy recommendations to resolve the recognized crisis in production and commercialization. Three work groups,

comprised of representatives from state agencies, the Regional Unions, and producer groups, organized to produce three documents on the following topics: (1) the social organization of producers, (2) productive organization, and (3) management of harvest and commercialization (BANRURAL 1987a; 1987b; 1987c; and 1987c). These documents provided the discussion papers for a General Assembly in June, 1987, to formally regulate planting and export in the valley of Apatzingán. All parties signed, stating that they would abide by the programmed planting stages, the number of hectares programmed, and the projected volume of cantaloupe for the packing houses. At the same time, the Ministry of Agriculture and Hydraulic Resources (SARH) published an announcement in Michoacán's major newspaper, publicly stating these norms (see Appendix E).

These three studies identified and analyzed the major problems discussed in previous chapters, emphasizing the real threat of losing cantaloupe from the valley. The work groups proposed a major reorganization of production and commercialization (BANRURAL 1987a, 1987b, 1987c, and 1987d; and Appendix F). The documents constitute a conscious recognition of local problems, analysis of local and external factors that led to the current crisis, and state officials and producer groups' public commitment to abide by their own recommendations in the collective interest of resolving regional problems.

Production and Producer Associations

The work group on the social organization of producers stated that each association would hold an internal assembly to define the exact number of cantaloupe producers and to modify internal statutes. The group proposed that producers document that they had grown cantaloupe for the past three years and demonstrate their productive capacity. With these and other recommendations, the group intended to exclude non-producers and those primarily interested in financing commercial production (BANRURAL 1987b:1-22) (see Appendix F for a complete list of policy recommendations).

To enforce these regulations, the Regional Union authorized SARH to contract a private company to oversee production and packing for the 1987/88 season. Apatzingán producers would pay the company a fixed quota per crate exported from the valley. At the season's end, net profits were to be divided between the company and those producer groups who had cooperated (CISAM 1987).

The company proposed to document all transgressions by producers and producer associations, using this documentation as the legal basis for denying permits in the following season, 1988/89. Disciplinary action targetted both producer groups who had permits and rented them to others and those who packed fruit from other associations (Abel García, Grupo de Trabajo, personal communication, 1988).

The producers assumed that the firm would penalize dissident producers and packing houses, forcing them to adhere to the norms discussed above. The service contract stated that the firm "compromised itself to improve, with its participation, the agricultural order, preventing the deliver of fruit to packing houses with those not contracted. . ." (CISAM 1987). Producers groups contended that SARH already had the legal capacity to regulate, program, and control production, while the private firm could not enforce these norms. They maintained that all locals could readily identify the dissident associations and technical problems in the valley. The problem was not more identification and documentation of transgressions; local gossip provided that information. Resolving the problems was the issue, which required state agencies and regional authorities committed to the documents and mandates they readily produced on paper.

Tell me what services you lent me and I'll pay you. With a civil contract, I don't have to pay automatically. If your technicians went to my field, if your technicians shut down the pirates, if you normalized production so the price stayed high when we harvested . . . well, then . . . but if you didn't do anything, why should I pay you?

(Director, Producer Group)

Capital

As discussed in the previous section, financing has now returned to the control of the U.S. buyers. Financing is still under written contract between the buyer and the

producer group, but the contracts leave loopholes to the buyer's advantage. Lacking independent financing or alternatives, local groups cannot negotiate more favorable terms, despite policy recommendations to the contrary. The U.S. distributors are no longer required to furnish letters of credit, and local producer groups have little legal recourse if the distributors fail to make regular and timely payments on fruit purchased.

Responding to price changes in the U.S. market, the buyers can readily back out of established contracts. Buyers exert greater control in business dealings with the producer groups, changing prices on a daily basis if required. If the market is saturated with a certain size of cantaloupe, buyers can limit purchase to a predetermined volume. Buyers can quickly alter repayment schemes to continue recuperating production credit. In some cases, they increase the percentage retained from producers' harvest. In others, they can force the packing house to return part of the maguila collected to cover packing costs. Also, buyers may pull out of packing houses completely if the market price drops significantly. In cases where buyers have only financed 40-50% of the costs of production, they may cover their credit and then withdraw from the valley, leaving the packing house without a buyer for its fruit.

Trying to normalize these contracts, one of the working groups (in the 1987 assembly discussed above) proposed (1)

regional standards for contracts for all producer groups and (2) that U.S. company representatives should arrive in September to negotiate contracts prior to the season. Those companies not agreeing to these terms would not be allowed to purchase fruit in the valley of Apatzingán. In order to "liberate ourselves from American tutelage," the group also recommended the Regional Union establish its own distributor across the border in the United States, both to check on the U.S. companies and to expand direct exports of cantaloupe to the U.S. market.

The 1987/88 season brought no change in contract terms, despite the efforts of regional authorities and the private regulatory firm. U.S. buyers provided the majority of financial capital used in cantaloupe production, and with control over this resource, overrode any local regulatory efforts (see Figure 8.1). Lacking independent financial resources, regional and local authorities could not enforce more favorable contract terms for Apatzingán producers. Producers accepted the conditions offered, as long as they guaranteed the capital and technical inputs required in cantaloupe production.

Permits

In the 1987 assembly, the work group on organization of production recommended changes in production regulations, following earlier recommendations of the Ministry of Agriculture (CDA 1984). Producer groups, in soliciting

planting permits from the Regional Union, were required to specify the planting stage, area to be planted, type of irrigation, number of hectares authorized, and land tenancy for each parcel (BANRURAL 1987b:3-12). The regulations mandated that: (1) producers could not rent or sell planting permits, (2) producers could not belong to one or more organization at the same time, (3) producer organizations which planted more than the number of hectares authorized would lose their planting-export permits, (4) each producer was authorized to plant a maximum of 5 hectares, under gravity irrigation, and 6 hectares, with pump irrigation, and (5) organizations could not pack more than their allotted quota, unless they demonstrated to the Regional Union that excess production was the result of improved production technology, not pirating fruit from other groups. The work group also identified specific areas in the valley where, due to fungal diseases and nematodes, producers were no longer allowed to plant cantaloupe.

Despite the proclamations, during the 1987/88 season, the private firm (discussed above) documented that 8 producer groups had not planted their legal allotment, undoubtedly renting a total of 1041 hectares to other producer groups. Lacking financial resources, the directors of these groups rented their parcels, and several operated only the packing houses throughout the season.

Packing

Over the years, authorities and producers have become concerned over the increase in pirating among packing houses. Pirating refers both to (1) the producer who carries his fruit to another association's packing house, and to (2) the packing house that receives the fruit from another association's producers. As groups increase, and the Regional Union issues the same number of planting permits, pirating increases. Newer producer groups, with fewer hectares, have strong economic incentives to pack more fruit than they produce. Pirating disrupts the long-term stability of the commodity system: (1) the association which cannot repay its credit, (2) the buyers who do not recuperate their credit, nor make a profit, (3) the region because Apatzingán has earned a reputation as a "problem" area, and (4) the producer who loses credit and planting permits for the subsequent season.

In the 1987 General Assembly, the work group on control of the harvest and commercialization targetted management problems in the packing houses and quality control of cantaloupe exported from the valley of Apatzingán. Concerned about the increase in pirating, the group allowed packing houses to open only during the harvest of their authorized planting stages. To prevent producers from carrying their fruit to other packing houses, additional recommendations indicated the need for checkpoints along the

major highways in the valley, staffed by personnel from the Ministry of Agriculture and Hydraulic Resources (SARH) and the Regional Union "José María Morelos," which would issue producers "transport permits" to deliver to the corresponding packing house. SARH proposed to enforce the quality regulations of the U.S. Norms of Importation, established by the U.S. Department of Agriculture, at all regional packing houses in order to establish regional quality standards in fruit exported to the United States (see Appendix F). The group also recommended that a specialized committee, under the Regional Union and SARH, observe the packing of cantaloupe in all packing houses in order to improved the regional standards in selection and packing of fruit (BANRURAL 1987d:4-7).

During the 1987/88 season, the contracted firm documented all transgressions: (1) excess area planted, (2) planting without permits, (3) carrying fruit to other packing houses, (4) failing to destroy crop residue, and (5) receiving fruit in packing houses from other associations' producers (Abel García, personal communication, 1988). At the packing houses, technicians checked the list of cantaloupe received, noting when producers from other associations delivered their fruit. Technicians also documented if the graders of certain packing houses were accepting fruit of poor quality or mixing sizes for the export market. The firm documented and sent letters to all

producers and associations who violated regulations. The documentation represented an ambitious undertaking, but as a private company, the firm lacked any legal capacity to enforce commercial regulations, and pirating continued.

Under certain conditions, producers sacrifice their future options for immediate needs. In 1987/88, the U.S. market opened between \$4.00-5.00 per crate. By March 2, 1988, prices on the smaller sized fruit, the most common size, dropped to \$1.00 per crate. At average yields of 500 crates/hectare (45 kilograms/crate), a producer required \$5.00 per crate to cover costs of production and net a return of \$1000/hectare. At \$1.00-2.00 per crate, the producer could not cover harvest costs, transport expenses to the packing house, nor credit repayment. This essentially drove the producers to carry their fruit to other associations.

Markets

As in previous periods, the U.S. buyers continue to control access to the U.S. market. Over time, Apatzingán faces increased competition from other cantaloupe-producing regions in Mexico (see Chapter Six). During the 1987/88 season, the combination of increased supply and low U.S. consumer demand, according to the U.S. buyers, allowed the buyers to drop local prices below costs of production (as discussed above). Lacking independent access to market, local organizations were forced to drop prices to their

producers, restrict packing, and abandon fields not yet harvested. Under crises in market conditions, local organizations have no control and can only respond to the constraints imposed by the U.S. buyers. At the end of the 1987/88 season, almost all packing houses closed down early, abandoning producers and firing packing house employees.

Conclusions

The market crisis of the 1987/88 season reflected both changes in external conditions and the increasing inability of local level organization to effectively control regional production and commercialization. The last factor evolved, over time, through the loss of regional autonomy. Several critical points have undermined regional autonomy and local control over production and commercialization.

Regional Conflict among Producer Groups

Inability to control commercialization. The growth of new producer groups has undermined local ability to effectively confront the U.S. buyers. In the early days, the few existing AALs were more powerful, controlling large amounts of land in compact areas. Earlier sections in this chapter relate instances where AAL directors, dissatisfied with the price offered by the U.S. buyers, withdrew all delivery for several days until they could reach an agreement with the U.S. buyers. Now, there are too many packing houses. If some local organizations confront

buyers, there are always others who will work with the buyers.

Inability to control production. Also, the increased number of groups undermines SARH and Regional Union efforts to control regional overproduction. SARH cannot effectively regulate 43 producing groups, from controlling area planted, timing of planting, renting of permits, to production management of the fields. In distributing smaller and smaller land area to more producer groups, SARH encourages overproduction, since the groups have strong incentives to overproduce. The increased number of groups and the conflict among them has undermined local autonomy and regional control over production and commercialization.

Role of the State

In Apatzingán, the Mexican government actively intervened to grant and guarantee small producers, ejidatarios, access to cantaloupe production. BANRURAL's credit for cantaloupe production provided the financial base which allowed local organizations to take over the packing houses. Without financial control over production, the U.S. buyers could not force the producers to deliver their packing houses. Also, BANRURAL extended credit to local producer groups to initially purchase the packing houses. For local organizations and producers, state agricultural credit and alliances with state agencies provided the power to more effectively confront external forces. The financial

independence from the U.S. buyers provided the economic base for enforcing the state's and Regional Union's regulatory efforts through permits (see Figure 8.1). During the 1970-80 periods, independent financing resulted in greater local control over (1) the commodity system at the regional level and (2) contract negotiations with the U.S. buyers.

Still, during this period, U.S. buyers retained control over the technology and the market. Despite limited efforts and repeated proclamations, neither BANRURAL nor the Regional Union successfully established new ties with other foreign markets, such as Japan or Europe, or diversified commercial production to reduce regional economic dependence on cantaloupe. These institutions had their own agenda, apart from the needs of local producers in the valley of Apatzingán. BANRURAL, primarily interested in securing a guaranteed return to its investment, discouraged direct marketing, did not actively look for other markets, and reinforced the existing structure of the commodity system in its role as economic broker between the producer groups and the buyers. The Regional Union, concerned with retaining control producers and producer groups, focused its efforts on regional control, instead of diversifying markets and regional commercial crops, reinvesting profits in the commodity system, or acquiring better information on both the international and U.S. markets. Local commercial elite, directors within the Regional Union and the producer groups,

economically and politically gained in their intermediary positions as brokers. They continued to support the commodity system's structure, continuing the dependence on the U.S. market and a single crop.

The financial support of state and regional institutions enabled local forces to more actively impact production and commercialization, but only at the regional level. In not supporting local efforts to look for new markets and crops, the Mexican government and Regional Union prevented local groups from also gaining more control in the market and technology arenas. The structure of the commodity system, that is, the dependence on the U.S. market and technology, continued as before. When the government withdrew agricultural credit for cantaloupe in the 1980s, it also withdrew the financial base needed by regional agencies to back up their regulatory efforts. Studies and policy recommendations are ineffective once the region lost national control over production finance. Now, local forces could effectively confront the U.S. buyers only as long as market conditions were favorable. When conditions deteriorate, as they have currently, the continued dependence on the U.S. market reveals the region's vulnerability.

U.S. Buyers' Control over the Market

The cantaloupe commodity system in Apatzingán is a monopsony, a resource market situation in which there is a

single buyer of a particular resource. Economic theory predicts that U.S. buyers, controlling the market, inevitably pay lower prices and purchase less fruit from the producers than they would under a more competitive market situation. Apatzingán producers, in selling their product, do not have access to other buyers and must accept the price offered. In lacking independent financing, they cannot shift into other crops and remain vulnerable to changes in external market conditions and in decisions of the U.S. buyers.

National finance of cantaloupe production during the 1970s did not fundamentally alter the monopsony market structure. Retaining control over the market, U.S. buyers responded in different ways. Some left the valley, shifting to other Mexican regions, increasing market competition with Apatzingán. Others continued to work within the valley, arranging contracts with local intermediaries in the Regional Union and the Bank. In the 1980s, when BANRURAL withdrew credit, the situation shifted, as the U.S. buyers regained financial control over production.

The period of 1980-1987 also marked the growth in numbers of local producer groups (see Chapter Seven) and loss of regional control over cantaloupe production and commercialization. New groups proliferated, reflecting local political conflict over control of the packing houses and profits from commercializing the fruit. Disgruntled

producers and directors could only establish new organizations and packing houses if they received external financing and if they had access to a market to sell their product, cantaloupe. The U.S. buyers provided the financing for the new groups, undermining the local control of the state institutions and Regional Union. In a monopsony situation, the buyer gains from overproduction, which increases the supply and decreases the local price paid to the producer. Lacking independent finance capital, state and regional agencies cannot prevent local producer groups from seeking the only financial source available, U.S. buyers. Regulatory efforts are ineffective, and U.S. buyers reexert their control over production through their continued control over the market and finance capital.

In summary, the interaction of three factors explains historical shifts in local impact on the export commodity system in Apatzingán: (1) regional conflict among producer groups, (2) role of the state, and (3) the U.S. buyers' control over the market. The Mexican government's financial aid supported the original establishment of the local producer groups and their more effective bargaining position vis-a-vis the U.S. buyers during the 1970s. However, the state and Regional Union maintain the structure of the existing commodity system, that of a "limited good" situation, encouraging local competition among producer groups.

Loss of Bank credit returned production finance to the control of the U.S. buyers. In financing new groups, the U.S. buyers exacerbated the existing local conflict among producer groups, undermined regional control over production and commercialization, and contributed to the increased "chaos" in commercialization, particularly in the pirating of fruit. Responding to deteriorating market conditions, local producers adopt economic strategies which undermine the entire commodity system. Poor market conditions and excessive pirating by individual producers can, as in the 1987/88 season, reduce even buyer profits. This shift provides U.S. buyers with the basis to either (1) withdraw cantaloupe production from the valley of Apatzingán or (2) exert more direct control over production, reverting back to the system of the 1950s.

Within this framework, Chapter Nine examines production and commercialization data from the 1987/88 season to test which factors have been most important in leading to the current economic crisis. Given the limitations of the data, the next chapter cannot comprehensively assess the implications of historic shifts in resource control. Analysis of the data stands as an exercise to quantitatively address the interaction of local and external forces in the integration of this regional economy into an international market system.

CHAPTER NINE

PRODUCER ORGANIZATIONS AND PIRATING

Introduction

The Regional Union and local producers are increasingly concerned about the proliferation of producer organizations competing over the existing allotment of hectares and export volume quotas. Many producers and directors of the older, established associations attribute current problems of overproduction, low prices, and poor quality of fruit to the newer groups, contending that these groups have organized primarily to open packing houses and pack large volumes of fruit. Local producers are especially distressed at the regional authorities' inability to control these groups.

The Regional Union is responsible to deliver export permits to people, but they give permits to everybody. They gave permits to _____, who is a coyote of fruit. How can you combat the pirating of fruit if you're giving permits to a packing house that doesn't produce fruit, doesn't give credit, just exists to pack fruit?

You can see the pirating in their export permits. No hectares programmed and 1200 crates of melon a day Where do they get the fruit they pack? Why, they steal it from the real producer associations!

(Producer)

Research Objective

This chapter measures the impact of this local competition between older and newer groups on the operation of the system for the 1987/88 season and over the long term. In this section, the objective of the analysis is to compare types of producer organizations, assessing the impact of local commercialization practices on the economic system, not to assign responsibility to any one producer group.

The two categories of producer groups are distinguished by a number of characteristics. Category One is comprised of Local Agricultural Associations and Ejido Unions. This group tends to consist of the larger associations, controlling more total hectares in planting permits, but also with more producers, the majority of them ejidatarios. Category Two is comprised of Cooperative Societies, Societies of Social Solidarity, and Work Groups. This group tends to consist of smaller groups, all founded after 1980, without formal representation in the Regional Union. The membership consists of either producers who have left the original associations or those who have recently entered into cantaloupe production. Also, many local producers contend that newer groups are primarily comprised of wealthier, commercial producers and private entrepreneurs. Chapter Seven examines the organizational and legal aspects of these different types of producer groups in this data set.

Hypotheses

It is hypothesized that there are statistically significant differences in the economic practices and profits of these two categories of producer organizations. Second, it is hypothesized that this local behavior has an impact on the local market, measured in terms of the local market price. Third, it is hypothesized that this local behavior has no impact on the export market, measured in terms of market price over time, but it a reaction to declining market prices for cantaloupe set in the U.S. market.

Data Collection and Analysis

Data Set

The data base consists of production and commercialization data for all local producer organizations planting cantaloupe during the 1987/88 season. These data were collected as part of a regional effort to normalize cantaloupe commercialization in accordance with the norms accepted region-wide in June, 1987 (BANRURAL 1987a, 1987b, 1987c, and 1987d, see also Appendices E and F). Appendix H includes the statistical program and output. The data comprise the economic activity of all types of producer organizations; (1) Local Agricultural Associations, (2) Ejido Unions, (3) Cooperative Societies, (4) Work Groups, and (5) Societies of Social Solidarity (see Chapter Seven for further discussion). Also included is a category of

non-registered groups, who produced cantaloupe and operated packing houses during this season. The data constitute the total production of the valley from all producer organizations, and stand as the total population. The data were collected on a daily basis, then aggregated into two week intervals, to enable analysis of variation in production and income throughout the entire cropping cycle.

Data Analysis

The different legal types of producer organizations were initially aggregated into three larger categories: (1) older, established associations, founded during the 1960-70s (N=19), (2) newer producer groups, founded during the 1980s (N=16), and (3) a small, not legally registered category of groups who planted or packed cantaloupe without being legally registered (N=4). An additional five groups were dropped from the analysis because, although they were legally registered as cantaloupe producer groups with the Regional Union, these groups did not solicit planting permits for the 1987/88 season. The non-registered category was also dropped, as two of the groups operated only as packing houses and completely skewed the data.

Problems with Data Set

Variance. Most statistical methods assume the data are sampled from a normally distributed population. In this data set, many of the variables show unequal variance between the two categories of producer organizations.

Secondly, the income data are weighted on the lower income end, not showing a statistically normal population distribution. Finally, the small population size of the two categories ($N < 20$) suggests that statistical tests, such as analysis of variance and T-tests, may not be significant due to small sample size (Agresti and Agresti 1979:188). Instead, the Wilcoxon Rank Sum test was used in the statistical analysis. This is a nonparametric test for comparing two independent groups, comprised of analogous ordinal methods based only on the rankings of the observations. The only assumption required is that the observations are independent. The Wilcoxon Rank Sum test is used not only in statistical comparison of ordinal variables, but also in comparisons of small groups where the distribution may not be normal, due to small sample size.

Seasonal variation in production and price. Fresh fruit and vegetable production and marketing contain a high degree of variability. Total production rises and falls throughout the season, reflecting the timing of local producer groups' harvests. The Regional Union staggers planting permits in order to reduce fluctuations, but as discussed in previous chapters, producers and organizations often do not adhere to regional norms. Prices also fluctuate, depending on the size of fruit and on the U.S. market price, often changing on a weekly basis. Other organizational problems further increase the complexity and

Table 9.1. Definition of Variables Used in Statistical Analysis

Yield	=	$\frac{\text{Total tons of fruit packed}}{\text{Total number of hectares harvested}}$
Total income	=	Total value of fruit packed (export, national and local)
Total volume	=	Total tons of fruit packed (export, national and local)
Average hectares per producer	=	$\frac{\text{Total number of hectares harvested}}{\text{Total number of producers planted}}$
Average total income/hectare	=	$\frac{\text{Total value of cantaloupe packed}}{\text{Total number of hectares harvested}}$
Average total income/producer	=	$\frac{\text{Total value of cantaloupe packed}}{\text{Total number of producers planted}}$
Average profits per hectare	=	$\frac{\text{Ave. total income/hectare}}{\text{Ave. total costs/hectare*}}$
Overproduction	=	Total hectares harvested - total hectares programmed
Pirating	=	Total volume of fruit packed - total volume of fruit projected**
% Export market	=	$\frac{\text{Total volume of fruit exported}}{\text{Total volume of fruit packed}}$
% National market	=	$\frac{\text{Total volume of fruit national}}{\text{Total volume of fruit packed}}$
% Local market	=	$\frac{\text{Total volume of fruit local}}{\text{Total volume of fruit packed}}$

*Production costs are based on regional average, not the actual production costs for each producer organization. These data are not available. Production cost data provided by the Regional Union "José María Morelos." Regional average for 1987/88 season was \$1873.81 U.S./hectare.

**Total volume of fruit projected is based on the total hectares harvested multiplied by a regional average yield for cantaloupe in the valley of Apatzingán.

Source: Variables based on data collected from local producer organizations and the Ministry of Agriculture and Water Resources (SARH), Apatzingán, Michoacán.

dynamics of this data set: (1) groups with permits, not planting and renting their permits to other groups, (2) groups planting out of sequence or overproducing, and (3) packing houses that pack fruit when they are not programmed.

These periodic fluctuations are masked in annual summary data, but they exist, and they are characteristic of fresh fruit and vegetable systems. Despite the data set's limitations, statistical analysis can suggest general relationships and general trends over time.

Variables Selected

A range of variables were selected to statistically test differences between the two categories, in areas of economic activities and local competition.

Economic activities. To measure differences in economic activity, the independent variables selected were: (1) yields, (2) total income, (3) total volume of fruit packed, (4) average hectares per producer, (5) average total income/hectare, (6) average total income/producer, and (7) average profits per hectare (see Table 9.1). Given differences in size between many of the older associations and newer groups, the last three variables were selected to eliminate this bias.

Local competition. To look at competition between the two categories of organizations, three variables were selected: (1) overproduction, (2) pirating, and (3) market selection. Overproduction measures the difference between

the number of hectares an organization actually planted and the number of hectares it was programmed to plant by the Regional Union and Ministry of Agriculture. Pirating measures the difference between the total volume of fruit actually packed in an organization's packing house and the volume of fruit it was projected to plant. The projected volume is the multiple of the total number of hectares actually harvested and yield, based on a regional average for the valley of Apatzingán. These variables will indicate whether there is a difference between the two categories in economic practices.

There is also local gossip in the valley that some packing houses have a "soft hand," meaning they pack a higher percentage cantaloupe for export, even though that fruit may not be export quality. Local gossip alleges that the newer groups follow this practice more. Regional officials and local directors blame them for undermining Apatzingán's reputation in the U.S. market, at the same time that producers trade rumors and information in the search for higher individual profits. The data set includes total volume packed, in tons, for all three categories: export, national, and local markets. Three variables were constructed, ratios of volume of export, national, and local packed to total volume packed. These variables were compared to see if there were differences between the two

producer groups in the percentage of cantaloupe going into the export market.

Interpretation of Statistical Results

Initially, the statistical analysis suggest statistical differences between the two categories at a p-level of .20 but not at the selected .10 level, except in terms of number of producers and pirating (see Table 9.2). Review of the data set reveals an outlier, a Local Agricultural Association, with large total area planted and numbers of producers, which maintained a high total volume, high total value, and high percentage of export fruit. Without this outlier, the statistically significant differences between the two categories of producer organizations are even more evident (see Table 9.3). In total production and total volume of cantaloupe packed, this one association alone accounted for almost 50% of the total of each category. This association, with extremely high profits and low incidence of pirating, does not fit the pattern generally characteristic of the older associations. In light of the region's economic losses in the 1987/88 season, its success and behavior are unusual and of major theoretical concern. Later sections return to the theoretical implications of this case.

In this analysis, there are statistically significant differences for a number of variables: (1) total average income/hectare, (2) total average income/producer,

(3) average profits/hectare, (4) overproduction, (5) pirating, and (6) percentage of fruit selected for the export market. In discussing the data, means are included as reference, although with nonparametric data, statistical comparison was not based on the mean.

Economic Activity

Although the statistical means suggest differences between the two categories in terms of average total income, hectares harvested, and numbers of producers, the differences are not statistically significant.

The statistical differences are evident in terms of average total returns/hectare, average total returns/producer, and average profits/hectare. Calculated in U.S. dollars, the average total returns/hectare for the older associations is only \$690.00/hectare, while the newer groups earn an average of \$2990.00/hectare. Average total returns/producer is only \$2270.00 for the older category and an average of \$9520.00/producer for the newer group.

In order to estimate average profits, average returns/hectare were subtracted by average costs/hectare. In this case, actual cost figures were not available for each producer organization; a regional average was used to calculate the average costs. For this reason, statistical comparison would not be valid; however, based on this approximation, older associations show an average net loss of \$1180.00 U.S./hectare, while the new groups exhibit an

Table 9.2. Statistical Comparison of Production and Commercialization by Producer Category, 1987/88, Including Outlier.

	Category* One (N=19)	Category* Two (N=16)	P** Value
Ave. yield***	8.31	8.76	0.8800
Ave. total income****	229.75	169.84	0.9733
Ave. hectares harvested	170.31	103.88	0.1729
Ave. # of producers	59.21	32.44	0.0942
Ave. volume packed***	1514.11	1064.06	0.9466
Ave. hectares/producer	2.92	3.18	0.7209
Ave. returns/ha.*****	.87	2.99	0.1243
Ave. returns/producer****	2.88	9.52	0.1243
Ave. profits/ha.****	-1.00	1.02	
Overproduction	-72.63	-10.44	0.0288
Pirating***	-196.74	168.31	0.1592
% Fruit export	.67	.71	0.1627
% Fruit national	.27	.23	0.1469
% Fruit local	.06	.06	0.8248

*Means are for each category of producers. Category One is comprised of Local Agricultural Associations and Ejido Unions. Category Two is comprised of Cooperative Societies, Work Groups, and Societies of Social Solidarity.

**P value was estimated with the Wilcoxon Rank Sum test, a nonparametric test for comparing two independent groups. Statistical significance is determined at the .10 level.

***Measured in tons of cantaloupe. Yield is expressed in tons of cantaloupe/hectare.

****Measured in 1000 U.S. dollars. Conversion rate included in Appendix G. Average profits calculated from regional average production costs of \$1873.81 U.S./hectare for 1988/89.

Source: data collected from local producer organizations, Apatzingán, Michoacán, 1987/88 season. Production costs from the Regional Union "José María Morelos," Apatzingán, Michoacán.

Table 9.3. Statistical Comparison of Production and Commercialization by Producer Category, 1987/88, Without Outlier.

	Category* One (N=18)	Category* Two (N=16)	P** Value
Ave. yield***	7.63	8.76	0.7110
Ave. total income****	136.41	169.84	0.7531
Ave. hectares harvested	150.89	103.88	0.2402
Ave. # of producers	54.06	32.44	0.1421
Ave. volume packed***	1002.89	1064.06	0.8613
Ave. hectares/producer	2.89	3.18	0.5889
Ave. returns/ha.*****	.69	2.99	0.0754
Ave. returns/producer****	2.27	9.52	0.0754
Ave. profits/ha.****	-1.18	1.02	
Overproduction	-81.61	-10.44	0.0130
Pirating***	-558.11	168.31	0.0813
% Fruit export	.66	.71	0.0725
% Fruit national	.28	.23	0.0637
% Fruit local	.06	.06	0.9066

*Means are for each category of producers. Category One is comprised of Local Agricultural Associations and Ejido Unions. Category Two is comprised of Cooperative Societies, Work Groups, and Societies of Social Solidarity.

**P value was estimated with the Wilcoxon Rank Sum test, a nonparametric test for comparing two independent groups. Statistical significance is determined at the .10 level.

***Measured in tons of cantaloupe. Yield is expressed in tons of cantaloupe/hectare.

****Measured in 1000 U.S. dollars. Conversion rate included in Appendix G. Average profits calculated from regional average production costs of \$1873.81 U.S./hectare for 1988/89.

Source: data collected from local producer organizations, Apatzingán, Michoacán, 1987/88 season. Production costs from the Regional Union "José María Morelos," Apatzingán, Michoacán.

average net profit of \$1020.00 U.S./hectare. These data suggest that the older associations are actually losing money, while the newer ones continue to maintain a profit.

Certain qualifications must be made. These data are from only one season, and the local market experienced severe setbacks during the 1987/88 season (see discussion in Chapter Eight). However, these statistically significant differences between the two categories are not accidental or anomalies. They reflect serious organizational and market problems in the region and require explanation, which the next section will address.

Local Competition and Conflict

Many technicians, regional authorities, and local producers attribute current problems to the overproduction, pirating of fruit, and export market selection of some packing houses, particularly those of the newer groups. Examination of these variables indicates that there are statistically significant differences in all variables between the two categories of producer organizations (see Table 9.3).

Overproduction is a regional problem, with many estimating that producers often plant twice the area officially reported. In this case, negative counts indicate allotted planting permits that were not used (see Table 9.3). In the case of the older associations, this corresponds to several organizations, located in the center

part of the valley who, after years of planting cantaloupe in the same area, experienced yield declines and problems with fungal diseases and nematode infestations. These associations can acquire planting permits, then rent them to other producer organizations, often within the newer category. These newer groups then carry the planting permits to the outer valley margins, where there are fewer pest problems, higher yields, and cheaper labor costs.

Pirating. Pirating is a major problem in the valley. Pirating is calculated as the difference between the total volume of cantaloupe actually packed in the organization's packing house and the total volume projected to be packed¹. In Table 9.3, the difference between the two categories of producer organizations is statistically significant at .0813. In the case of newer producer groups, each organization packed an average of 168 tons of cantaloupe that it probably did not produce. For the older associations, each association lost an average of 558 tons of cantaloupe that it actually did produce.

Pirating refers both to packing houses which accept fruit from producers who belong to other associations and to producers who carry their fruit to other association's

¹. The total volume packed includes fruit packed for all markets: export, national, and local. Projected volume is estimated as a multiple of the number of hectares actually harvested and the average yield (tons/hectare) of cantaloupe for the valley of Apatzingán.

packing houses. This relates back to earlier discussions which distinguished between local competition (among organizations) and local resistance (between the organization and individual producer). Newer groups are overpacking fruit, probably from the older associations with whom they are competing. Their average total returns/hectare and average total returns/producer are higher because of this extra fruit. Undoubtedly, if they do not actually produce this extra fruit, their profits are even higher than estimated in Table 9.3, since they incurred no costs of production for the fruit.

For the older associations, an average total loss of 558 tons of cantaloupe/association represents a loss of both the cash value of the fruit and the original costs to produce the fruit. These associations lose because their producers run out on them. Their own producers carry this average 558 tons of cantaloupe/organization to the newer packing houses, their competition. The next sections on selection and the local market explain this behavior.

Export, National, and Local Markets

The valley of Apatzingán produces the highest percentage of export quality to total production of all Mexican states. This reputation, for high quality and relatively constant total production levels, enables the region to dominate U.S. export production. Chapter Five discusses the selection process at the packing house, noting

the strong economic incentives for both the packing house and producer to push a high percentage of fruit into the export market, earning a higher total income.

Yet, producers and authorities alike are equally concerned about maintaining Apatzingán's reputation in the U.S. market. Officials with the Regional Union and directors of the older associations have sometimes accused the newer producer groups of packing national quality fruit as export in order to generate more revenue.

Table 9.3 includes the distribution of fruit packed for the export, national and local markets. The ratios constitute percentages of the total volume packed. The data indicate statistically significant differences between the older and newer organizations in both packing for export and national markets. Older associations pack an average of 66% of total fruit for the export market and 28% for the national. Newer groups pack an average of 71% total fruit for the export market and only 23% for the national market. Both pack an average of 6% for the local market.

Several factors can explain these differences. First, the newer groups could produce a higher quality fruit, such that a greater percentage of their fruit would merit exporting. Second and more likely, these groups may shift fruit that would have gone to the national market over into the export market. The older associations tend to work with the established U.S. buyers, representing the larger

distributors, who are often present in the packing house to oversee the graders. Producers complain that under certain buyers they net a smaller percentage of export fruit, where they earn the most money, where the same load, if carried to certain other packing houses, would net a higher percentage. The next sections look at the impact of this behavior, both in terms of market price and producer resistance, on the system.

Impact on Export Commodity System

The previous section establishes a statistically significant difference between the two categories of producer associations. Differences in pirating and overproduction exist between the older associations of ejidatarios and the newer producer groups. This section examines the impact of these differences on the performance of the commodity system, both on the current local market and on market conditions over time.

This data analysis primarily stands as an exercise. Within the theoretical framework presented in Chapter Two, analysis must move beyond testing differences between these two groups to assessing the impact of these differences on the commodity system. The data in this section have several problems which prevent drawing final conclusion; they can be used to suggest directions for future research.

First, the production and commercial data over time for the valley of Apatzingán are not as accurate as the data

actually collected during the 1987/88 season. In many cases, the data are based on final reports from the local producer groups and/or the Regional Union. Second, cantaloupe prices are seasonal averages for the region, aggregating both export and national price. In reality, as shown earlier, cantaloupe prices change weekly. More accurate analysis would require weekly prices, but these are not available over time. Third, Apatzingán's season runs from December through May; no cantaloupe is exported to the U.S. from May through September. Annual averages do not capture the seasonality of the market. Finally, at this time, the data are inadequate to accurately model the relationship between changes in U.S. market conditions and Apatzingán supply and price response. More data are required, such as: (1) credit availability, (2) technical information, and (3) time lag between changes in U.S. market condition and Apatzingán producer response. These data thus are used to initially examine the impact of local conflict, as indicated in the previous section, on market conditions: (1) local market, during the 1987/88 season, (2) the export market, from 1971-1988.

Local Market

Market price. Changes in total volume do not appear to correlate with changes in average local market price throughout the season (see Table 9.4). Market price only represents an average, as different sizes actually receive

different prices. The local market undoubtedly cannot respond immediately to local changes in total volume and probably reflects other external factors. Yet, price, in complex ways, can influence producer decisions which, in turn, may explain the statistical differences observed in the previous sections.

Producer discontent. The producer, under contract with his association, is obligated to deliver his entire harvest to the association's packing house. In general, the producer complies with this restriction, since this insures access to planting permits and credit for the following season. Under certain conditions, producers will risk future loss and carry their fruit to another packing house. Here, the important factors are price rumors, producer security, and producer net profits.

In the region, the major U.S. buyers set a local price, as reported by the Regional Union. The major local packing houses adhere to these prices, but some other packing houses, particularly some of the newer ones, are always rumored to offer higher prices, although often only for short periods of time. Producers trade rumors of who is offering what prices, even as they deliver their fruit to their own packing house. After delivering the fruit, many often congregate, exchanging number of export crates received, problems with certain graders, and other

Table 9.4. Total Volume Expected and Packed, by Planting Stage, 1987/88, Valley of Apatzingán.

Stage	Total* Volume Expected	Total* Volume Packed	Export Market Price**
1st	3592	5031	4.50
2nd	1864	2910	4.00
3rd	4048	3591	2.50
4th	11192	12000	5.00
5th	14088	15560	4.00
6th	11320	6931	4.00
7th	7248	3529	3.00
1987/88	53352	49552	

*Figures represent total volume in tons for each category of producers. Category One is comprised of Local Agricultural Associations and Ejido Unions. Category Two is comprised of Cooperative Societies, Work Groups, and Societies of Social Solidarity.

****Measured in U.S. dollars. Price given is regional average for export market. Average price does not include current price for national or local market. Conversion rate included in Appendix G.

Source: data collected from local producer organizations, Apatzingán, Michoacán, 1987/88 season.

information. Among themselves, they trade accounts of different prices and different selection standards for the export market².

Secondly, for the ejidatario, security and confidence in the association are critical, given the volatility of external market conditions. In general, the directors and the organizations have the responsibility to defend and protect the small producer. Under extreme market conditions, under pressure from the U.S. buyer, the organization may be forced to restrict the percentage of certain sizes of fruit packed, limit total volume packed (see discussion in Chapter Six and Eight), or actually drop certain parcels³. To the U.S. buyer and the organization, the decision to drop a field is an economic decision reflecting poor market conditions. To the producer, abandoning a field, used only in extreme cases, constitutes

². One producer carried a truckload of fruit, the 1st cut in the morning, to his own association, and netted 18 crates of export quality. In the afternoon, on the 2nd cut, he carried the same truck to another packing house and netted 43 export crates. Subsequently, for the rest of the harvest, he carried a morning load to satisfy his association, and the afternoon load to the other packing house.

³. The directors assume responsibility for dropping a certain parcel, based on the field's inability to generate a high enough yield to cover production costs. The directors give the producer a "letter of freedom," which grants him the right to carry the harvest to another packing house. However, the organization stops all credit at this point, and the producer must find other capital to maintain the field in order to even secure a harvest.

a breach of contract by his own organization. If the organization does not take care of the producer, then the producer has no obligation to his organization.

Third, to the producer, the bottom line is not price itself but his individual profits. During the 1987/88 season, the local price on the smallest size for the export market dropped to \$1.00 per crate by March, 1988. At this time, this size represented the highest percentage of total volume in the packing house. At average yields of 500 crates per hectare (45 kilograms per crate), a producer needed a price of \$5.00 per crate to cover costs of production and net a return of \$1000 per hectare. At \$1.00-2.00 per crate, the producer could not cover harvest costs, transport, nor credit repayment.

In response, the producers carried their fruit to other packing houses. This economic behavior was more characteristic of older associations, with larger numbers of smaller producers, than the newer groups. Data disaggregated throughout the season indicates a statistically significant difference between the two categories toward the end of the season (see Table 9.5). This statistic represents producers running out on their own associations, reflecting the conditions discussed in the previous sections. The cantaloupe that was marketed was

Table 9.5. Pirating by Producer Category, by Planting Stage, 1987/88, Valley of Apatzingán.

	Category* One (N=19)	Category* Two (N=16)	P** Value
Stages			
Pirating***			
1st	33.68	34.12	0.4855
2nd	54.42	-0.50	0.3302
3rd	-22.47	23.00	0.9579
4th	112.42	40.69	0.3378
5th	96.58	28.69	0.1026
6th	-270.58	18.50	0.0128
7th	-202.32	22.31	0.6306

*Means are for each category of producers. Category One is comprised of Local Agricultural Associations and Ejido Unions. Category Two is comprised of Cooperative Societies, Work Groups, and Societies of Social Solidarity.

**P value was estimated with the Wilcoxon Rank Sum test, a nonparametric test for comparing two independent groups. Statistical significance is determined at the .10 level.

***Measured in tons of cantaloupe.

Source: data collected from local producer organizations, Apatzingán, Michoacán, 1987/88 season.

sold to other packing houses or to buyers from Guadalajara who purchased directly from producers⁴.

U.S. Export Market

What is the impact of local level problems and conflict on external market conditions over time? Local authorities and U.S. buyers express concern that the problems of overproduction and pirating have undermined cantaloupe's profitability in the region and Apatzingán's competitive advantage in the U.S. market.

Yet an examination of regional export production, national export production, and local price/ton over time does not support this perspective (see Table 9.6). Figure 9.3 graphically depicts these relationships over time. In this case, price is superimposed on total production to visualize relative shifts over time. From 1970-1988, total cantaloupe export production in Apatzingán does not show a longterm trend in increased exports, given to extreme fluctuations over time. In contrast, Mexican export production has steadily grown in the past 20 years, reflecting, as discussed in Chapter Six, other Mexican

⁴. The Guadalajaran buyers purchased fruit from the producer by the truckload, at around the equivalent of \$50.00 U.S. per load, at a central location on the outskirts of Apatzingán proper. They paid cash at time of purchase and made no distinction between export, national, and local quality. Local authorities expressed great concern as this had never occurred in the history of cantaloupe production in Apatzingán. Producers claimed they did better with these arrangements than with their own associations.

Table 9.6. Total Cantaloupe Export Production, 1971-1988.

	Michoacán (tons) (Quantity)	National (tons)	Price/ton in Mich (U.S. \$) (Price)
1971	51491	87818	104.0
1972	52471	80442	78.4
1973	58646	84275	76.8
1974	53324	91230	71.2
1975	n.a.	n.a.	116.0
1976	36065	73576	87.1
1977	37946	96067	83.6
1978	42788	103376	88.0
1979	48339	96410	129.6
1980	32310	92307	109.6
1981	44057	87285	163.2
1982	54188	84285	160.3
1983	20747	74359	132.7
1984	47458	105242	149.7
1985	46983	92226	125.7
1986	51864	122917	139.0
1987	44231	110362	n.a.
1988	47808	117447	103.0

Source: Department of Statistics, Ministry of Agriculture and Water Resources, District 056, Apatzingán, Michoacán, and the National Union of Horticultural Producers, Culiacán, Sinaloa.

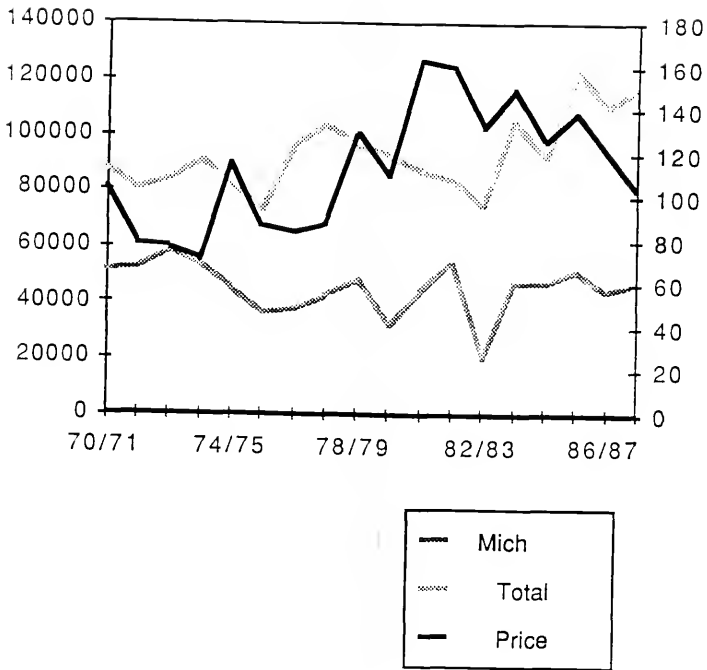


Figure 9.1. Cantaloupe Export Production, 1971-1988.

Production is expressed in 1000s of tons. Production figures for Michoacán and Mexico Total correspond to the left vertical axis. Price, equivalent expressed in U.S. \$, corresponds to the right axis.

Source: Department of Statistics, Ministry of Agriculture and Hydraulic Resources, District 056, Apatzingán, Michoacán, and the National Union of Horticultural Producers, Culiacán, Sinaloa.

states entering into export production of cantaloupe. Prices increased slowly throughout the 1970s, but in the 1980s, local prices received by Michoacán producers have declined steadily. This pattern suggests that decline in prices received by Michoacán producers actually reflects external factors beyond local level control.

Export Market Conditions

U.S. Cantaloupe Imports

Mexico, and particularly Apatzingán, is dependent on the U.S. export market. Regional economic dependency reduces local level impact on the commodity system. First, the monopsony market conditions reduce the ability of the producer and local level organizations to impact on local price (discussed in Chapters One and Six). Second, although Apatzingán controls a high percentage of the volume supplied from December to May, on an annual basis, they supply a small percentage of total volume of cantaloupe consumed in the United States.

Table 9.7 includes data on U.S. production and imports during the early 1980s. U.S. domestic production has increased, although this occurs during a cycle when it does not compete with Mexican production. In contrast, the U.S. import figures show a decline in Mexican imports. The potential to expand the consumer market, to increase U.S. consumption of cantaloupe, is unlikely. The limited demand, increased export supply to the United States, and the

monopsony control of the buyers are undoubtedly factors in keeping down the price at the local level.

Supply, Price, and the Costs of Production

The producer says, how is it possible that for ten years, one crate of melon valued \$3.00 and still continues at \$3.00.

And this is the comparison. If ten years ago, it cost me 30,000 pesos to make one hectare and now costs me 3,000,000. . . If you converted those 3,000,000 pesos to dollars and those 30,000 from ten years ago, they are the same dollars. The cost of production in dollars has continued more or less the same.

(Administrator, Regional Union)

Explaining exchange rates and the Mexican peso devaluations of the 1980s to Apatzingán producers is difficult. They face increasing costs, both in production and in their own living expenses, and contend that they should receive a fair payment for their labor. The Regional Union, concerned about retaining the crop in the valley at any cost, agrees to terms set by the buyers. The National Union, facing demands from regional unions other than Michoacán, allots planting permits to new states. The buyer operates a business firm, and, faced with a limited U.S. market and increased supply from different producers, maintains relatively constant prices, since there is nothing to drive the price up.

Table 9.8 contains data on total cantaloupe production, total value earned, average regional price/ton, and costs of production/ton of cantaloupe in Apatzingán from 1971-1988.

Table 9.7. United States Cantaloupe Production and Imports, 1977-1983.

	U.S. Production*	Mexican Imports**	Other***
1977	180655	90026	1170
1978	249611	96595	1256
1979	207381	90675	1179
1980	177898	86272	1680
1981	205217	81878	1545
1982	207680	54295	1639
1983	210172	54295	1639

Production expressed in tons.

*Production from May-September. California and Texas are primary producers.

**Imports from December-May generally. Michoacán is primary producer.

***Imports primarily from Honduras and the Dominican Republic.

Source: SARH/DGEA 1983:13. Original source is the Mexican Institute of Foreign Commerce (IMCE).

Table 9.8. Cantaloupe Production, Value, Price, and Costs, 1970-1988, Valley of Apatzingán.

	Production (tons) (Quantity)	Value (1000 U.S.\$) (Price)	Price/Ton (U.S.\$) (Price)	Cost/Ton (U.S.\$) (Cost)
1970	56784	4429	78.0	30.1
1971	83334	8666	104.0	39.7*
1972	58920	4619	78.4	49.3
1973	97769	7436	76.8	59.4*
1974	83590	5952	71.2	69.6*
1975	40123	4654	116.0	79.4*
1976	62043	5405	87.1	89.4*
1977	66960	5597	83.6	99.4
1978	83872	7383	88.0	89.4*
1979	84412	10944	129.6	79.5
1980	85726	9615	109.6	81.0*
1981	84480	13680	163.2	82.4*
1982	92517	15236	160.3	88.8*
1983	48990	8961	132.7	85.3
1984	65044	9557	149.7	111.5
1985	58763	8096	125.7	103.4
1986	62088	8625	139.0	127.3
1987	54423	7627	139.5	171.5*
1988	61357	5099	103.0	215.7

*Interpolated figures as actual costs of production were not available for these years.

Source: Production, Total Value, and Price from the Department of Statistics, Ministry of Agriculture and Water Resources, District 056, Apatzingán, Michoacán. Costs of production from the Regional Agricultural Union "José María Morelos", Apatzingán, Michoacán.

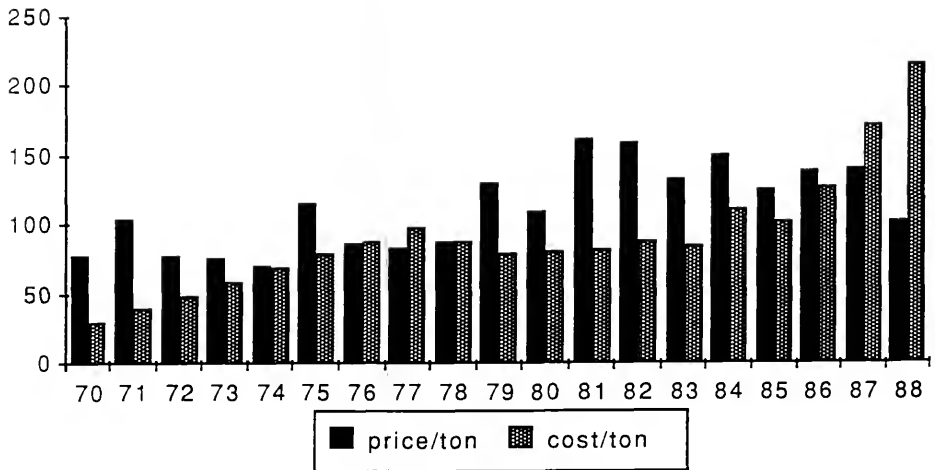


Figure 9.2. Cantaloupe Production, Value, Price, and Costs, 1970-1988, Valley of Apatzingán.

Source: Department of Statistics, Ministry of Agriculture and Water Resources, Apatzingán, Michoacán, and the National Union of Horticultural Producers, Culiacán, Sinaloa.

In various years, production costs were interpolated in order to fill in years for which no data are available. Depicted graphically in Figure 9.2, the data clearly indicate that relatively constant prices and increasing costs of production have reduced the profitability of cantaloupe production in Apatzingán. Total value earned from cantaloupe has declined relative to increased export supply from other Mexican states. Prices paid to producers have not changed in the past 18 years. Costs have increased, as discussed in Chapter Five, reflecting primarily increased chemical and hired labor costs, to the point that the producer nets little or no profit from cantaloupe production under existing prices.

Conclusions

Initially, the statistical comparison of two categories of producer organizations, the older associations and newer producer groups, demonstrated statistically significant differences in economic behavior between the two categories. Older, established associations, comprised primarily of ejidatarios and with large land areas, net lower average total returns to land and producer than the newer groups. Analysis of indicators of local level competition showed statistically significant differences between the two categories as well. The older associations show an average loss to pirating, represented by their producers carrying the associations' fruit to other packing houses. The newer

groups show an average gain from pirating, as their packing houses accept fruit from other associations. These statistics are only indicators of general behavior patterns, since there is a great deal of variation among the groups and in the actual data.

These statistics comprise two sets of behavior, reflecting the earlier discussion distinguishing between competition at the organizational level and producer resistance within the organization. The newer groups compete more effectively with the associations by sometimes offering a little higher price, packing a higher percentage of fruit for the export market, and accepting fruit to pack for which they did not finance the production. Small producers, many with the older associations⁵, facing low market prices, increasing costs, and loss of confidence in their own directors and associations, will risk future gains in order to secure some immediate profit⁶. Small producers'

⁵. Of a total of 1792 cantaloupe producers who planted during the 1987/88 season, 1125 producers (65%) are members of either Local Agricultural Associations or Ejido Unions. 519 (28%) are members of Cooperative Societies, Societies of Social Solidarity, or Work Groups. The remaining 158 (7%) planted with non-registered groups.

⁶. This point refers backs to the outlier association, not used in the statistical analysis. This association does not fit the general discussion, as it is a large organization with many producers, which overproduced and overpacked throughout the season. The producers did not abandon the association and continued delivering their fruit. When the U.S. buyer, concerned about the obvious excess in total volume being packed, attempted to restrict the volume, the directors of the association refused to back down. Other buyers said

desertion of their own associations indicates serious organizational and economic causal factors, as well as negative implications for the regional agricultural economy. Local and regional authorities respond to this problem with more regulations, trying to force the producer to comply with stated norms (see discussions in Chapters Five, Seven, and Eight). Regulation does not address the economic or organizational factors which led producers to abandon the security of their own organization, thus reducing its relevance to resolving problems.

At the level of international market conditions, local, state and national authorities assign part of the responsibility for deteriorating market conditions to the local conflict and competition over limited resources. Here, the issue is how and to what degree local level behavior impacts on the longterm market conditions faced by the Apatzingán producer. Local behavior does not explain declines in local market conditions over time. Relatively constant total production and price have not kept pace with increasing costs of production. What was once a lucrative export crop during the 1960-1970s now offers little individual economic opportunities to the small producer.

that the buyer should have "closed the gate," that is, refused to accept any more fruit, but the association convinced the buyer to continue packing a high volume. The association defended the producers' and its own economic interests in the face of demands by the buyer.

In summary, local competition and infighting do not appear to be the primary factors which explain the current crisis. This behavior is a reaction against external market conditions, examples of resistance strategies adopted by peasant producers (see discussion in Chapter Two). As long as producers continue competing to produce a highly perishable crop for one export market, with a limited demand, financed by foreign buyers, they are stuck. Local conflict and competition has had an impact, by focusing efforts exclusively on cantaloupe, insuring the economic dependency which insures the region's vulnerability to changes in international market conditions.

Initially, this chapter proposed three hypotheses: (1) that there are statistically significant differences in economic practices and profits between the two categories of producer organizations, (2) that conflict between the two categories impacts on the local market, and (3) that local conflict has no impact on the export market conditions. The primary data analyzed from the 1987/88 season support the first hypothesis. There is a difference between older and newer producer groups, and the newer groups appear to gain at the expense of the ejidatario associations. The historical data suggest that local behavior and conflict have not been the primary factors in explaining deteriorating market conditions for Apatzingán cantaloupe producers. To support or reject these last two hypotheses

requires more precise data and further analysis than this chapter has conducted.

CHAPTER TEN

CONCLUSIONS AND POLICY RECOMMENDATIONS

General Conclusions of Study

This study proposed three research objectives: (1) to analyze the organization of an agribusiness commodity system, (2) to examine local resistance to a foreign agribusiness system, and (3) to explain the external and local factors which led to the current crisis in cantaloupe production in the valley of Apatzingán (see pages 4-8 in Chapter One). The study examines the integration of Apatzingán producers into an international economy, in the production of cantaloupe for export to the United States. The research thus focuses on the process of economic dependency, particularly the linkages between external factors and local level response to external conditions. This concluding chapter first reviews the three research objectives and then presents recommendations for further research and policy changes.

Agribusiness Commodity System

The commodity system as a unit of analysis provides a practical model for linking different levels of organization (social, political, and economic) within a discrete

commodity system. In the case of Apatzingán, the commodity systems approach allows this study to examine external conditions at the macro level and their impact on the integration of Apatzingán producers at the micro level. At the micro level, the study examines local producers and intermediaries' response to these conditions and the impact of these strategies on the performance of the commodity system.

The biological and technical requirements of cantaloupe initially impose constraints which contributed to the current technical problems now faced by Apatzingán producers: (1) increases in insect pests, funguses, and nematodes, (2) reduced yields, and (3) increased chemical costs. The ejidatario faces severe economic constraints: (1) dependence on outside financing, (2) insecure income, (3) increased costs, and (4) loss of individual control over technical decisions in his own parcel (see Chapter Five). Facing these constraints, the ejidatario often makes individual production decisions which are detrimental to the longterm viability of cantaloupe in the valley of Apatzingán. Technical recommendations and regulations by regional and state agencies are ineffective because they do not resolve the ejidatario's economic constraints.

The ejidatario faces even greater constraints in the marketing of cantaloupe, retaining little, if any, control over the commercial product. International agricultural

trade, through supply and demand, imposes general market conditions. In Apatzingán, the market structure for cantaloupe is a monopsony, in which a group of U.S. companies, operating as a single buyer, control access to the export market for cantaloupe. This structure reduces local control over the system, particularly in production and product price. Apatzingán's commodity system is further characterized by distinctive features: (1) dependence on a single crop, cantaloupe, (2) dependence on U.S. buyers to purchase cantaloupe, (3) dependence on U.S. financing, (4) channeling of all resources required for production through local intermediaries, (5) severe economic constraints of ejidatarios, and (6) a resulting tolerance of corruption at the local level (see Chapter Six).

Over time, changing conditions have reduced the performance capability of the commodity system: (1) increased competition from other states, (2) increased costs of production, (3) fluctuating market price, and (4) increased numbers of producers fighting over the same limited number of hectares (Chapters Six, Seven, and Eight). These changes are theoretically explained in the context of integrating a local economy into a capitalist market system.

Integration of the Peasantry

As the peasant economy becomes integrated, or "subsumed," into a capitalist economic system, peasant producers and others at the local level lose the autonomy to

make independent political and economic decisions. Autonomy in economic terms refers to the independent control over the means of production, specifically, land, labor, and capital, and, finally, the product. In the case of Apatzingán, ejidatarios and private producers are organized into formal, legally-registered organizations through which they obtain the legal permits, finance capital, chemical inputs, and technical assistance required to produce an agricultural commodity, cantaloupe, for an export market.

Apatzingán has still not witnessed the full commoditization of the agricultural economy, and local producers have acquired a reputation for their "resistance," particularly, their refusal to obey production and commercialization norms. The Mexican government, in redistributing land through the ejido system and support for ejidatarios, prevented the full commoditization of all means of production, and thus the complete subsumption of Apatzingán producers to a capitalist economy. As shown in the theoretical model presented in Chapter Two, the case of Apatzingán demonstrates the critical role of the state and local alliances with the state in confronting commercial enterprises in a capitalist economy.

The history of cantaloupe production in Apatzingán is the history of the struggle between local level and external forces for control over critical resources needed to commercially produce cantaloupe. Three major factors

explain historic shifts in local control over critical resources: (1) conflict among local producer groups, which reduced regional control over commercialization and production, (2) the critical role of the Mexican government in land reform and financial credit for cantaloupe production, and (3) the U.S. buyers' continued monopsonistic control over the market (see Chapter Eight). Despite state intervention, the state and Regional Union maintained the existing structure, a "limited good" situation, encouraging local competition among producer groups. Withdrawal of Bank credit in the 1980s returned production finance to the control of the U.S. buyers.

In resisting complete integration and loss of autonomy, Apatzingán ejidatarios defend themselves with the only production factors over which they still retain control, land and the production process. Responding to the deteriorating market and technical conditions described above, local producers adopt economic strategies which negatively impact the entire commodity system. In production, they siphon off credit, resell chemical inputs, fail to perform all productive activities, and plant areas in excess and out of sequence. In marketing, they sometimes carry their harvest to other packing houses, securing a higher cash income. This behavior is a survival strategy in response to a commodity system which, over time, has failed to deliver required profits to the individual producer.

Explaining the Current Crisis in Cantaloupe

Explaining the crisis in cantaloupe production requires analysis of the complex relationship between the crop's technical requirements, as well as the social, political, and economic aspects of capitalist agriculture, the state, local level organization, and the ejidatario. This study has examined the cantaloupe commodity system and the process of economic integration into a capitalist economy, demonstrating structural factors which contributed to deteriorating market conditions. The study also attempts to measure the impact of local level factors, such as competition and pirating among producer groups.

Structural Factors

Monopsony market conditions. Dependence on the U.S. market and U.S. buyers to purchase the cantaloupe places Apatzingán producers at a disadvantage. Producers must accept lower prices than they would receive in a more competitive market structure. Local producer organizations and the Regional Union initiated efforts to expand into other markets, particularly Japan or Europe, but several factors impede market diversification. First, Japanese and European buyers do not finance production, only buying the harvested fruit. Second, brokers prefer to sell by commission, remitting the net returns at the season's end. Third, Japan and Europe are very distant, and a highly

perishable crop, such as cantaloupe, requires air transport, dramatically increasing the final consumer price.

Dependence on the U.S. market is also the result of U.S. financing. Dependence on U.S. financing prevents local level producer organizations from negotiating contracts more favorable to their producers. It prevents the region from exploring other markets or diversifying its agricultural base. As long as the region lacks independent financing, producer organizations cannot expand into new markets or other commercial crops.

Channeling of resources. All required inputs and permits for cantaloupe production and commercialization are channeled through the producer organizations: (1) planting permits, (2) credit and chemical inputs, and (3) export permits. Channeling of resources resulted in the "broker" system examined in Chapters Two and Six. The "broker" system concentrates local intermediaries' and U.S. buyers' control over distribution of resources and benefits in cantaloupe production. Other types of systems could diffuse local control over resources.

In contrast, local agricultural associations in Sinaloa only control planting permits. Farmers obtain credit and inputs from other types of organizations, such as regional agricultural credit unions. Not dependent on the producer associations for financing, farmers may carry the fruit to other commercial packing houses, assuming individual

responsibility for credit repayment (Alonso Lopez Gomez, personal communication, 1988). Sinaloa is a very different agricultural economy, dominated by family-based groups of large commercial farmers; its situation is very different from that of Apatzingán. Still, there are different ways of structuring distribution of resources and benefits. The structure can either channel or diffuse control over resources. Channeling resources, as in the Apatzingán system, inevitably contributes to the growth of local brokers, who manage resource and benefit distribution according to their own objectives. The system also encourages the corruption characteristic of the cantaloupe commodity system in Apatzingán.

Inability of organizations to deliver. Over time, local and regional directors are increasingly vulnerable to changes in international market conditions. As described by J. Scott, this constitutes the "classic ideological contradiction of the transition to more capitalist forms of production" (Scott 1985:311). Local brokers control their ejidatario members by continuing to redistribute some benefits from export cropping, ensuring the ejidatario's support. Directors mobilize and manipulate their producers through traditional social and political mechanisms, if cantaloupe delivers remunerative income to the producer.

The ejidatario also has expectations. The producer is fully cognizant of his subordinate position to the directors and of abuses committed by local intermediaries.

. . . as producers, we already have an clear idea of the problem. The real problem is that for sure we can't say anything contrary about our functionaries who have permanent relations with those foreigners.

(Producer)

The Apatzingán producer lives with corruption, recognizing it as an inevitable part of the commodity system. Ejidatarios know that local intermediaries control their access to commercial crop production. Unable to secure financing or market cantaloupe independently, the ejidatario tolerates corruption, with the expectation that the organization continues delivering the inputs required to produce the crop.

J. Scott and others present constraints which prevent peasant producers from acting against the system (Scott and Kerkvliet, eds. 1986). Chapter Nine examines conditions within which producers actually do cut out on their own associations, indicated by the wide incidence of pirating by ejidatarios during the 1987/88 season. The season was not a unique anomaly. Under deteriorating market conditions over time, the directors cannot deliver the limited resource distribution needed to hold their own ejidatarios to their association.

Conflict between the individual and the group. The above problem above reflects an inevitable conflict between the individual and the collective, or organization. Local and regional authorities propose recommendations, assuming that individual producers should cooperate for the collective good of resolving regional economic and technical problems. They contend that collective organization of production, in planting in compact areas, and of commercialization are the keys to improving the system. Planting in compact areas reduces the logistic problems of coordinating water management, chemical applications, technical assistance and hired labor. Authorities issue regulations to enforce norms, to force producers to deliver their fruit to their member associations.

From the ejidatario's view, compact farming reduces the individual producer's control over his own parcel, reflecting the growing dependence on external institutions and the market. In Chapter Five, the ejidatario adopts individual economic strategies which sabotage the production technology, yet allow the producer to retain some income. In commercialization, pirating serves the same function, undermining the organization's profits, yet enabling the ejidatario to retain some of the profits from marketing the fruit. The collective organization cannot deliver the individual incentives required to justify the costs of cooperating with the organization.

It is often assumed. . . in discussion of organizational or group cohesion that the crucial matter is the degree of consensus. . . . The degree of consensus is sometimes discussed as though it were the only important determinant of group action or group cohesion. . . . it does not follow that perfect consensus, both about the desire for the collective good and the most efficient means of getting it, will always bring about the achievement of the group goal.

Organizations with primarily economic purposes, like labor unions, farm organizations, and other types of pressure groups, normally claim that they are serving the interests of the groups they represent. . . . Thus it would be surprising if most of the members of these "interest groups" should always neglect their own, individual interests. Self interested behavior may in fact be common in organizations of the kind under study.

(Olson 1977:59-64)

In his theoretical analysis of the logic of collective action, M. Olson stresses the need for individual incentives to encourage cooperative action. In Apatzingán, with the increased participation of ejidatarios in commercial cantaloupe production over time, the existing organizational system does not adequately meet the specific needs of the ejidatarios. Undoubtedly, neither local brokers nor U.S. buyers are particularly interested in guaranteeing remunerative incomes to local producers; this is not the basis of capitalist agriculture. Yet, the data in Chapter Eight suggests that, despite severe economic constraints, there are conditions within which the individual producer abandons the collective.

Specific needs of ejidatarios. The specific needs of ejidatarios entering into commercial agriculture impose constraints to direct marketing of the crop, making the producer more dependent on intermediaries. The ejidatario needs a guaranteed income at harvest, and cannot afford to wait the 5-6 months required when selling fruit at a higher price by commission. To obtain cash and chemical inputs, the producer enters into contracts which compromise 100% of the harvest, without guaranteeing a selling price.

All the producers are here, waiting. . . Why? You know the producers here. Two, three, to four hectares of melon - 12,000,000 pesos to produce and how much do they get from the sales? At best, they get 12,000,000 pesos. When they get paid, there it stops.

They don't win but they lived 3-4 months, and if they net 1,000,000 pesos that helps them live the rest of the year, until November when the season begins again. And next season, there they are waiting for credit to plant melon.

(Administrator, Regional Union)

Small producers in Apatzingán cannot wait the time required nor take the risks involved in selling fruit by commission in the international market. Because of their economic needs, ejidatarios depend and tolerate a "broker" system which ultimately fails to deliver the original benefits. Apatzingán differs from other export systems in Mexico in two ways: (1) ejidatarios retain control over land, preventing their alienation from land by private investors, and (2) by planting in individual plots,

ejidatarios retain some control over the product. These factors provide the mechanisms for ejidatarios to strike back at the system if the organizations cannot deliver their obligations.

Role of the state. In Apatzingán, the state actively intervened, but its agenda differed from that of local commercial elite. Several points are critical. First, the government maintains that it has a social responsibility to guarantee rural employment and income opportunities to the large population still in rural areas. Lázaro Cárdenas envisioned land reform as a means by which both small farmers could actively enter into commercial agricultural production and the state could organize a political support group. Second, the government considers agricultural activity within the range of public order, since commercial agriculture provides a basis for national economic growth. Rather than entrusting regional agriculture to foreign investors who have no long term interest in the general economic development of the region, state representatives believe that they have the right to actively shape the nature and direction of regional agricultural development. Third, particularly in the case of Apatzingán, the state actually financed the construction of irrigation systems, roads, railroads, essentially, the entire infrastructure of the valley. The Mexican government did not finance the

regional infrastructure only as a service to the U.S. distributors.

Yet, the state has complex, often conflicting, motives in supporting small producers in commercial agriculture, and in reality these motives often results in short-lived, bureaucratic situations which do little to gain the confidence of small producers. Ejidatarios distrust the government, based on experience, to manage anything efficiently.

Involution of local economy and competition. U.S. market and financial dependence results in growing numbers of producers and organizations competing for a limited number of permits. The subsequent involution of cantaloupe production and commercialization impedes the development of broader based commercial agricultural economy. During the 1960s, ejidatario organizations and private producers planted over 50,000 hectares of cotton; now 43 organizations squabble over 5000 hectares of cantaloupe. In keeping with government mandates, Apatzingán producers established "specialized" producer groups, organized around a single crop. Other authorities contend that this strategy both (1) narrowed the vision and alternatives of producers, and (2) undermined the potential for politically strong diversified local producer organizations (Alonso López González, personal communication 1988). Increased competition among producer groups reduces the ability of local level

organizations to negotiate successfully with foreign buyers and to expand into other markets and crops.

Search for alternative crops. Local authorities and many producers, private and ejidatario, are concerned about the increased marijuana production in the outlying margins of the valley. In recent years, marijuana has transformed the local economy as it expanded tremendously in area. Those associated with the industry become more visible in local society. Locals comment that traffickers formerly hid their profits; they lived discretely, as if ashamed of their profession. Now, they do not care and live in a flamboyant and ostentatious manner.

The potential impact on cantaloupe production and export is profound. In one case, during the 1987/88 season, a financier arrived late, yet within one month had organized a new producer group, solicited and obtained planting permits, planted, and constructed a packing house. Producers noted the availability of credit and the constant presence of armed guards in the packing house. Yet, by the middle of the season, the financier withdrew support, leaving most producers without either credit to finish the cycle and or a buyer for the crop. Local worry that these non-producing groups are not interested in improving production technology or product quality, necessary to maintaining cantaloupe production in the valley.

In front is one business, and in back is the other. . . If they carry three trailers instead

of 25 but carry goma in the three, why do they want the melon? Why? Because we are producers of cantaloupe, we have a packing house, we have permits. Here comes the trailer of _____, a group of ejidatarios, a group of campesinos, here, pass this way. And across the border they go. . .

(Producer)

Local authorities and producers also resent outsiders' use of their ejidatario organizations for individual profit and gain. Again, locals accurately recognize that integration into commercial economies, legal or illegal, reduces local control over the regional economy. Yet, as the U.S. buyers furnish less credit, competition for limited credit becomes fiercer. Non-traditional financiers provide resources and capital beyond the reach of any local organization.

Measuring the Impact of Local Level Response

Comparison of two categories of producer organizations, the older associations and newer producer groups, demonstrated statistically significant differences in economic behavior between the two categories. There is a difference between older and newer producer groups, and the newer groups appear to gain at the expense of the ejidatario associations. Older, established associations, comprised primarily of ejidatarios and with large land areas, net lower average total returns to land and producer than the newer groups. The older associations show an average loss to pirating, as their own producers carry the associations'

fruit to other packing houses. The newer groups show an average gain from pirating when they accept fruit from other associations.

The newer groups compete more effectively with the older associations by sometimes offering a higher price, packing a higher percentage of fruit for the export market, and accepting fruit to pack for which they did not finance the production. Small producers, many with the older associations, face volatile market prices, increasing costs, and loss of confidence in their own directors and associations. will risk future gains in order to secure some immediate profit. Ejidatarios' deserting their own associations indicates serious organizational and economic causal conditions. State and local regulations, in not addressing these causal factors, are ineffective in resolving technical and commercial problems.

The historical data on production volume, market price, and costs of production suggest that external conditions may better explain declines in local market conditions over time. Relatively constant total production and periodic changes in price have not kept pace with increasing costs of production. What was once a lucrative export crop during the 1960-1970s now offers little individual economic opportunities to the small producer. More precise data and further analysis is required.

In summary, local competition and infighting do not appear to be the primary factors which explain the current crisis. Local behavior is a reaction against external market conditions, examples of resistance strategies adopted by peasant producers (see discussion in Chapter Two). The only options open to the individual ejidatario provide individual remuneration yet further undermine the commercial agricultural system which the ejidatario depends on. Producers are stuck, as long as they continue competing to produce a highly perishable crop for one export market, with a limited demand, and financed by foreign buyers. Local conflict and competition has had an impact, by focusing efforts exclusively on cantaloupe, insuring the economic dependency which insures the region's vulnerability to changes in international market conditions. Addressing these problems requires further research on local resistance's impact and on alternative organizational structures.

Future Research

Future Research

Comparative analysis of production. In Chapter Nine, the data supported the hypothesis that there are differences in business practices between older ejidatario associations and newer producer groups. Pirating appears to be a factor, but there are other factors which also may be important: (1) costs of production, (2) management of water, inputs, and

hired labor, (3) technical assistance and skill, and (4) access to credit and markets. Here, the hypothesis is that if new producer groups are gaining at the expense of older associations, these newer groups are not more efficient and effective operators in a commercial market. To test this hypothesis would require more detailed information on the operations of different types of organizations. This research would fall within the bounds of earlier research on collective ejidos (Hewitt de Alcántara 1976; and Eckstein 1966) which documented the competitive efficiency of collective ejidos if not undermined by agricultural policy.

Alternative organizations. This case study has documented a social and economic system in which there is little collective identity or sustained cooperative action. This individualism is a logical reaction to the inequitable and corrupt economic system. Additionally, individual goals and mistrust of others are characteristic of social relations in all arenas of life in Apatzingán.

Rather than continuing to document failed collective efforts, future research also needs to examine successful organizations of ejidatarios in commercial agricultural production and marketing. Specifically, these studies should focus on mestizo farmer organizations, which would be more generalizable than those of indigenous groups.

This research should examine the specific mechanisms which enable the organization studied to both (1) operate

competitively in a commercial market and (2) maintain internal cooperation, particularly to hold organizational officials accountable to the members. Topics analyzed could include (1) credit sources and distribution mechanisms, (2) organization of production, (3) organizational structure, (4) costs and benefits to individual participation in organization, (5) mechanisms for mobilizing ideological and political support of members, (6) participation and impact of individual members on organizational decisions, (7) nature of external support, both private sector and government, and (8) marketing structure and operations.

Research on small farmer organizations also needs to evaluate both the specific agricultural commodities and the market conditions in which these organizations can compete more effectively with large scale agribusiness. In studies of both organizational factors and technical and economic conditions, the goal is comparative analysis which would identify those factors and conditions most conducive to successful organizations of small farmers.

Studies of successful economic organizations over time can also examine changes in the organization's role and expansion into other arenas. The ability of a small farmers' organization to successfully organize its members as an economic enterprise holds great implications for the political role of these organizations. In Apatzingán, some local ejidatarios bitterly complain that the government, in

its signing-off on more and more new producer groups, undermined the original associations. They contend that these local agricultural associations, large organizations, dominated by ejidatarios represented a political threat to the Mexican government's control over regional politics.

Diversified technical and economic systems.

Apatzingán's major problem is the region's complete dependence on U.S. financing, U.S. markets, and a single crop. Others contend that organizations, dependent on a single crop, undermined what historically were strong regional political organizations. Through diversification of crops and markets, organizations increase their ability to survive fluctuations in agricultural markets.

The national market system of horticultural crops is controlled through the Central de Abastos, the national market center in Mexico City. This system is a center-periphery system, in which fruit leaving Apatzingán is trucked to the Central de Abastos before being distributed to other Mexican states. Research on regional and local markets could look at opportunities to bypass the national center, reducing distribution costs and increasing local producers direct control over marketing.

Commercialization and marketing. This study focused primarily on a local agricultural economy involved in export crop production. Despite recognizing the impact of external market conditions, this study did not specifically examine

the commercialization process outside the valley, from export to marketing in the United States. There is relatively little research in this area, particularly on the commodity brokers and distribution system within the United States. Further research could examine the organization of these systems of distribution, particularly comparing direct marketing, or selling by commission, with selling to a broker in Mexico. In contrast to other commodities, there are inherent obstacles in fresh fruit and vegetable marketing systems which may prevent the structural concentration characteristic of other crops. In addition to a small group of large companies, along the U.S. border, there are a large number of small companies, family operations, which have moved a large percentage of the Mexican fruit and vegetable exports. Looking at the constraints of small family businesses in marketing may provide insights into the alternatives open to commercial organizations of small farmers.

Policy Recommendations

The solution lies not in one crop, cantaloupe, a fresh fruit luxury export, highly perishable and with limited consumer demand. Developing the commercial agricultural economy of the valley of Apatzingán requires a structural reorganization of the production and commercialization sectors: (1) diversification of the agricultural economy, to reduce the economic dependency on one crop, (2)

establishment of new markets, to reduce the local vulnerability to changes in the U.S. market, (3) establishment of new direct ties with regional markets in Mexico, to allow local producers to directly market fruit not meeting export standards, (4) search for national sources of financing, both public and private sector, to reduce the control of the U.S. distributor companies, (5) the restructuring of local distribution of credit, inputs, and planting and export permits, to prevent the channeling of all critical resources through local intermediaries, (6) the strict enforcement by state agencies of locally agreed upon norms and regulations, and, particularly, regional and national level support for local authorities who enforce regulations, and (7) an open book policy on all financial accounts and operations within producer groups, whereby the regional union supports the producer's right to inspect the financial operations of each respective organization.

Conclusions

We can affirm that no plan, program or sectoral policy can be realized if it is not based on the efficient and autonomous organization of rural producers.

(Working Group No. 1, BANRURAL 1987d:6)

Among social scientists, the debate continues over the relationship between small rural producers and agricultural modernization, or more generally, the expansion of capitalism. Yet, at the local level, in the valley of

Apatzingán, where residents live the real consequences of this interaction, many contend that successful development requires active, viable producer organizations. Locals have argued for autonomous local organizations of rural producers. Many ejidatarios rightly contend that the "error of the past" was to impose producer organizations from the outside. The existing organizations, as discussed in Chapters Seven and Eight, have encountered major problems with internal corruption, financial mismanagement, contractual relations with buyers, and lack of quality control in production and packing. These problems undermine the economic viability of these organizations and cantaloupe production in the valley.

The tension between social and economic development goals, and between regional and national needs, is not unique to Apatzingán. Apatzingán's particular pattern of social and economic organization reflects intervention by the Mexican government to guarantee ejidatarios access to commercial crop production, through credit, infrastructural support, and formal producer organizations. The problems arose because of the inability of the introduced organizational structure to operate effectively over time in negotiating with international agribusiness. Authorities blame the ejidatarios, ignoring the structural factors of market conditions, state intervention, and institutional controls, which lead individual producers to adopt

strategies which sabotage the local system. U.S. buyers blame local organizations, contending that large organizations of small producers are inherently incapable of operating efficiently in commercial agricultural markets. The political economy framework attributes responsibility to the expansion of capitalist agriculture, downplaying the significance of local level response.

This study examines the specific local mechanisms which led to this complex and conflictive situation. The contribution to broader theories of internationalization of agriculture and economic dependency lies in the local level focus. Rather than simply concluding that expansion of commercial agriculture has not benefitted local systems, social science research needs to examine local level processes. This level of analysis provides a better understanding of regional variation in the expansion of capitalist agriculture, local level processes in increasing economic dependency, and more useful insights for effective policy recommendations.

GLOSSARY
PRIVATE AND GOVERNMENT AGENCIES

AAL	Asociación Agrícola Local
ANAGSA	Aseguradora Nacional Agrícola y Ganadera Mexican national agency insuring recipients of agricultural credit against crop and animal loss due to natural causes
BANCOMEX	Banco Comercio, S.A.
BANEJIDAL	Banco Nacional de Crédito Ejidal merged in BANRURAL in 1975
BANGRARIO	Banco Agrario de Michoacán merged in BANRURAL in 1975
BANRURAL	Banco Nacional de Crédito Rural Mexican national bank providing credit to <u>ejidos</u> . formed in 1975 through merger of BANEJIDAL and BANGRARIO. BANRURAL is used as a general term.
CAADES	Confederación de Asociaciones Agrícolas del Estado de Sinaloa state-wide agricultural association uniting nine local agricultural associations in Sinaloa
CAEVA	Campo Agrícola Experimental del Valle de Apatzingán Agricultural experiment station for the valley of Apatzingán, one of five stations under supervision of CIAPAC. Coordinates horticultural research with local SARH department and the UAR "José María Morelos."
CCI	Central Campesina Independiente independent peasant organization, not affiliated with the PRI.
CDA	Comité Directivo Agrícola Regional federal agency, comprised of representatives from UAR and SARH, in charge of programming crops within region of the Valley of Apatzingán, Michoacán

CIAPAC	<p>Centro de Investigaciones Agrícolas del Pacífico Centro</p> <p>One of eleven agricultural research institutes under the supervision of INIA, each situated in different agroecological zone. CIAPAC covers tropical agricultural research in the southwest coastal zone of Mexico, comprising states of Michoacán, Jalisco, and Guerrero.</p>
CISAM	<p>Compania Impulsora y Supervisora Agrícola de Michoacán</p> <p>Private agency, hired by UAR "Jose Ma. Morelos" to document producer and association infractions in cantaloupe production and commercialization, Apatzingán, Michoacán</p>
CNC	<p>Confederación Nacional de Campesinos</p> <p>National peasant union, sector of PRI, the government party</p>
CNPP	<p>Confederación Nacional de la Pequeña Propiedad</p> <p>National private producers union, element of PRI, the government party</p>
CONASUPO	<p>Compania Nacional de Subsistencias Populares</p> <p>Federal agency buying commodities from farmers at official guaranteed prices, operates retail distribution outlets</p>
CROC	<p>Confederación Revolucionaria de Obreros y Campesinos</p>
CTM	<p>Confederación de Trabajadores Mexicanos</p> <p>National worker union, element of PRI, the government party</p>
DAAC	<p>Departamento de Asuntos Agrarios y Colonización</p>
EPA	<p>Environmental Protection Agency (U.S.)</p> <p>U.S. federal agency studying effects of chemical applications</p>
FBA	<p>Food Business Associates</p> <p>Private U.S. marketing firm, hired by UNPH to research Mexican expansion into U.S. consumer market</p>

FDA	Food and Drug Administration (U.S.) U.S. federal agency regulating chemical use, particularly on imported fresh fruits and vegetables
FIRA	Fideicomiso Instituto en Relación con la Agricultura Specialized agency of Bank of Mexico to channel capital from international banks to agricultural sector
INIA	Instituto Nacional de Investigadores Agrícolas National agricultural research institute, under the direction of SARH
LNC	Liga Nacional Campesina
PPS	Partido Popular Socialista Socialist political party, not affiliated with PRI
PRI	Partido Revolucionaria Institucional Official Mexican government party. consists of three mass organizations: (1) National Peasant Confederation (CNC), (2) Confederation of Mexican Workers (CTM), and (3) National Confederation of Public Workers (CNOP)
PRONASE	Productora Nacional de Semilla Federal agency which oversees seed production and quality
SA	Sociedad Anónima Legal term for Mexican private corporation
SAG	Secretaría de Agricultura Ministry of Agriculture, precursor of SARH
SARH	Secretaría de Agricultura y Recursos Hidráulicos Ministry of Agriculture and Water Resources
SC	Sociedad Cooperativa Cooperative society, under Ministry of Work
SHCP	Secretaría de Hacienda y Crédito Público National ministry responsible for overseeing all export and import commercial activities in Mexico. Acts to finance and to research critical sectors.

SSS	Sociedad de Solidaridad Social Society of social solidarity, under Ministry of Agrarian Reform
SRA	Secretaría de Reforma Agraria Ministry supervising land redistribution to ejidal sector
UAR	Unión Agrícola Regional "Jose María Morelos" Regional agricultural union coordinating production and commercialization of cantaloupe in valley of Apatzingan, Michoacan, regional member of UNPH
UE	Unión Ejidal Ejido union, under Ministry of Agrarian Reform
UGOCM	Unión General de Obreros y Campesinos de México
UNPH	Unión Nacional de Productores de Hortalizas National private union coordinating production and export of horticultural crops, primarily to the U.S.
UPEH	Unión de Productores Ejidales Hortofrutícolas del Estado de Michoacán Regional agricultural union, not affiliated with the UNPH, based in Nueva Italia, Michoacán
USDA	United States Department of Agriculture
WMVDA	West Mexico Vegetable Distributors Association

GLOSSARY
MEXICAN TERMS

<u>campesino</u>	Generally meaning peasants. From the word, <u>campo</u> , meaning countryside.
<u>Cárdenismo</u>	The brand of populism during the regime of General Lázaro Cárdenas (1934-40). <u>Cárdenistas</u> refers to the followers of Cárdenas, currently the followers of Cuahtémoc Cárdenas, his son, the current leader of the political opposition in Mexico.
<u>comprador</u>	Representative of the U.S. distributor who buys the fruit from the producer group.
<u>ejido</u>	Land reform institution through which government redistributed land to peasant communities after the Mexican Revolution. The Mexican government retains the actual land title and grants lifetime use rights to the <u>ejidatarios</u> , members of the peasant community. The Ministry of Agrarian Reform (SRA) administers the <u>ejido</u> .
<u>hacienda</u>	Large landed estate. Owners are called <u>hacendados</u> .
<u>jornalero</u>	Agricultural wage laborer.
<u>lana</u>	A local term for money.
<u>maquila</u>	A set price per packing crate charged by the packing house to cover the costs of packing the fruit. Cost is paid by the buyer to the packing house.
<u>mattón</u>	A local term for a hired murderer, generally a personal bodyguard.
<u>pirateo</u>	The practice of selling fruit to another association's packing house. Refers both to the producer who carries his fruit to another association's packing house, as well as to the association that accepts the fruit.
<u>predio</u>	A parcel or plot of agricultural land.

prestanombre Local practice in which Mexican resident lends as front for business actually owned or controlled by foreigners.

rancho Ranch or farm, generally in cattle production. Owners are called rancheros.

APPENDIX A
METHODOLOGY AND DATA COLLECTION

Research Methodology and Data Collection

The fieldwork was conducted from August, 1987, to August, 1988, in the valley of Apatzingán, Michoacán, with the support of the U.S. Department of Education Fulbright-Hayes and the Inter-American dissertation fellowships. During this year, I lived in the municipality of Apatzingán and worked with a number of organizations and institutions throughout the entire valley.

In analyzing the organization of this economic system, a great quantity of quantitative and qualitative data were collected at local, regional and national levels, covering the technical, social, economic and political aspects of cantaloupe production and commercialization. I used a wide range of methods, both in a conscious effort to adequately cover the material and in response to opportunities offered to me. Several people in Apatzingán, concerned about the increasing disorganization and corruption of the commercial system, facilitated my access to unpublished documents and to production and commercialization data. They also taught me the politics of the "system," that is, how producers, directors and buyers manipulate the system through alliances and informal networks in order to achieve objectives. Their patience and interest in my work were influential as I shaped my ideas and interpretations.

Agronomic Information

The cantaloupe season in the valley of Apatzingán lasts from November through May, during the dry season months. During the 1987/88 season, I worked with the Asociación Agrícola Local de Productores de Frutas y Legumbres de Apatzingán. The AAL Apatzingán, the oldest and largest local cantaloupe producer association, also represents the largest number of ejidatario producers. For these specific reasons, I worked closest with this association. I accompanied the agronomists to a different sector each day, five days a week, overseeing different producers, for the entire course of the season. During this time, the head agronomist and the technicians taught me a "hands-on" agronomy of cantaloupe production, from land preparation through harvesting. The technicians helped me in collecting production data from the Apatzingán cantaloupe producers, and in interviewing producers about production and marketing problems. By the end of the season, the head agronomist allowed me to write chemical recommendations for the farmers, and most of the producers thought that I was

studying to become an agronomist. I was one of three female "agronomists" in the entire region.

In addition, I periodically accompanied agronomists from other local producer associations and the Regional Agricultural Union "José María Morelos." I was interested in the differences in organization of production, technical assistance, and farmers' perceptions of major problems among different organizations.

Key Informant Interviews

I interviewed directors from different types of legally registered producer organizations: (1) Local Agricultural Associations (AALs), (2) Ejido Unions (UEs), (3) Societies of Social Solidarity (SSSs), (4) Cooperative Societies (SCs), and (5) Work Groups (Grupos). In these interviews, information was collected on legal registration of different group types, economic strategies, and the history of producer organizations in the valley of Apatzingán. I repeatedly interviewed authorities from the Regional Union "José María Morelos," representatives of the Ministry of Agriculture and Water Resources (SARH), U.S. buyers, ex-bank officials, legal assessors for the producer organizations, technical advisors, experienced cantaloupe producers, and, before leaving Mexico, representatives of the National Union of Horticultural Producers (UNPH) in Culiacán, Sinaloa.

In these key informant interviews, I focused on the organization of the commodity system, how it operated, and how these constraints affected relations between the different participants in the system. Several local informants allowed me to tape interviews over a 4-5 month period, and in this way, they taught me the complexities of this system, as well as their own frustration in dealing with it.

Participant Observation

In living in the region and working with a specific local producer organization, I also participated in other activities with local agricultural technicians, attending technical demonstrations and lectures at the Regional Union, throughout the season. As a native English speaker, I worked with the Regional Union and some other local producer groups in translating documents, telexes, and other material. I also served as a technical translator for the Regional Union during the course of the season when foreign, non-Spanish speaking technicians visited to demonstrate new equipment. Finally, at the end of my stay, with representatives from the Regional Union, I attended the National Specialized Assembly of Cantaloupe Producers in

Guadalajara, Jalisco in August, 1988, during which the National Union of Horticultural Producers (UNPH) distributes the national allotment of cantaloupe hectarage among its member regional unions.

Archival Data

In Apatzingán, the Epoca: Voz del Valle, established in 1962, has reported on agricultural and political news for 25 years. From June through July, 1988, I translated notes from every newspaper on cantaloupe production, rural organizations, and other agricultural crops from 1962-1988. The newspaper provided me historical data on production, prices, costs of production, U.S. companies, local level conflicts with associations, and periodic intervention by various state agencies. This information also provided the basis for follow-up interviews with key informants.

I was granted access to a wide range of unpublished documents, including acts of constitution, memos from meetings, and regional studies on the technical and commercialization problems. In the key informant interview, I interviewed many of the local authorities and technicians who had participated in the sessions and studies.

Quantitative Data

From the Regional Agricultural Union "José María Morelos" and the Ministry of Agriculture and Water Resources (SARH), I obtained statistical data on local cantaloupe producer groups. The data aids analyzing changes in production and income over time and in comparing economic behavior among different producer organizations. I was aided by SARH technicians who collected detailed and accurate production and commercialization data for the 1987/88 season.

APPENDIX B
TECHNICAL RECOMMENDATIONS
IN CANTALOUPE PRODUCTION,
VALLEY OF APATZINGAN, 1984

(This is an English translation of an unpublished document issued by the Agricultural Directive Committee (CDA) in 1984. The CDA is composed of local representatives from the Ministry of Agriculture and Water Resources (SARH), the Regional Union "José María Morelos", the Ministry of Agrarian Reform (SRA) and the Bank of Rural Credit (BANRURAL).

Short Term Recommendations

1. The Ministry of Agriculture and the Regional Union should notify producers in April or May as to the status of their planting permits to allow them to adequately prepare the land and secure credit.
2. We recommend compacting cantaloupe production at three levels:
 - a. Regional level, that four zones be established: (1) Zone I, including the municipalities of Tumbiscatio, Huacana, Michoacán, and Jilotlán de los Dolores, Jalisco, (2) Francisco J. Mújica (Nueva Italia) and Apatzingán, (3) Parácuaro and Tepalcatepec, and (4) Gabriel Zamora (Lombardía, Nuevo Urecho, and Buenavista.
 - b. Producer organizations, that programmed planting be in the least number of planting stages possible.
 - c. Level of ejidatarios or private producers, that they program planting in one stage and plant in compact areas in lapse of no more than 10 days.
3. Since October plantings attract the highest market price, we recommend the following: (1) that those who plant during the 1st stage can not plant in following stages, or (2) that all October plantings be eliminated.
4. We declare that it is indispensable that producers eliminated all crop residue after harvest.
5. We recommend that all producers must plant in the stage programmed, that they cannot plant in stages later than they are programmed.

Medium Range Recommendations

We recommend that each ejido or group of contiguous private producers be integrated into a "Unit of Agricultural Production" with the following characteristics:

1. Divide the cultivable area in blocks equally, of permanent character, according to the most important crops planted.
2. Each block area will be planted with only one crop in a compact area and in a as few days as possible.
3. Crop rotation favors the conservation of soil fertility and also permits the planning and programming of crops.
4. Organization should be carried out with the participation of producers and the appropriate institutions. The responsibility of the supporting institutions is to provide: (1) adequate technology support, (2) supervision to insure adequate chemical applications and fitosanitary methods, (3) adequate technical assistance, credit, crop insurance, and distribution and management of irrigation water, and (4) observance of infractions and enforcement of regulations.

APPENDIX C
INSECT PESTS AND PATHOGENS,
CHEMICALS AND DOSE RECOMMENDED,
1978-1987

(Source: Technical reports issued by the Ministry of Agriculture, published in Epoca: Voz del Valle, the regional newspaper, 1978-1987)

Insect Pest	Chemical Product	Dose/ha.	Cycle
Mosquita blanca	Tiodan 35%	2.0 lt.	1978/79
	Tamaron 600	1.0 lt.	31/10/80
	Nuvacron (60%)	1.0 lt.	6/11/81
	Folimat 1000	.75 lt.	
	Ortene (75%)	1.0 lt.	
	Tamaron 600 (CE)	1.000 lt.	12/1/79
	Thiodan 35% (CE)	3.000 lt.	25/1/80
	Orthene 90 (PH)	1 kg.	22/1/82
	Folimat 1000 (CE)	0.750 lt.	
	Tamaron 600 (CE)	1.00 lt.	2/4/82
	Orthene 90 (PH)	1.00 kg.	11/2/83
	Folimat 1000 (CE)	.75 lt.	11/11/83
	Tamaron 600 (CE)	1.0 lt.	27/1/84
	Thiodan 35% (CE)	3.0 lt.	19/10/84
	Orthene 90 (PH)	1.0 kg.	
	Folimat 1000 (CE)	.75 lt.	
	Tamaron 600 (CE)	1.00 lt.	1987
	Folimat 1200 (CE)	.5 lt.	
Minador de la hoja	Diazinon (25%)	1.5 lt.	1978/79
	Dipterex (80%)	1.5 kg.	31/10/80
	Folimat 1000	.75 lt.	
	Afugan 260 E (CE)	.400 lt.	12/1/79
	Folimat 1000 (CE)	.750 lt.	25/1/80
	Tamaron 600 (CE)	1.000 lt.	
	Vydate (CE)	1.00 lt.	
	Basudin (CE)	0.750 lt.	
	Dipterex 3% (p)	20-25 kg.	
	Afugan 260 E (CE)	.400 lt.	22/1/82
	Folimat 1001 (CE)	.750 lt.	
	Tamaron 600 (CE)	1.00 lt.	
	Vydate (CE)	1.00 lt.	
	Basudin (CE)	1.00 lt.	
	Dipterex 3% (p)	20-25 kg.	

	Dipterex 3% (p) Afugan 260 (CE) Folimat 1000 (CE) Vydate (CE) Basudin (CE) Dipterex 80 (PS)	20-25 kg. .400 lt. .75 lt. 1.00 lt. 1.00 lt. 1.00 kg.	2/4/82 11/2/83
	Afugan 260 (CE) Folimat 1000 (CE) Tamaron 600 (CE) Vydate (CE) Dipterex 3% (p)	.400 lt. .75 lt. 1.00 lt. 1.00 lt. 20-25 kg	11/11/83
	Afugan 260 (CE) Folimat 1001 (CE) Tamaron 600 (CE) Vydate (CE) Basudin (CE) Dipterex 3% (p)	.400 lt. .750 lt. .9 lt. 1.0 lt. 1.0 lt. 20-25 kg.	27/1/84 19/10/84
	Dipterex 3% (p) Folimat 1200 (CE) Vydate (CE) Diazinon (CE) Dipterex 80 Belmark 300	20-25 kg. .5 lt. 1.00 lt. 1.00 lt. 1.0 kg. 0.5 lt.	1987
Barrenador de la fruta	Lanate (90%) Sevin (80%) Dipterex (80%)	0.3 kg. 2.0 kg. 1.5 kg.	1978/79 31/10/80
	Lannate 90 (PH) Sevin 80 (PH) Tamaron 600 (CE) Belmark (CE) Curacron 50 (CE) Dipterex 80 (PS)	0.400 kg. 2.5-3.5 kg. 1.000 lt. 0.400 lt. 1.5 lt. 2.0 kg.	12/1/79 25/1/80 6/11/81
	Lannate 90 (PH) Sevin 80 (PH) Tamaron 600 (CE) Dipterex 80 (CE)	0.400 kg. 2.5-3.5 kg. 1.0 lt. 2.0 kg.	22/1/82 16/4/82 11/2/83 11/11/83 27/1/84 19/10/84 1987
Gallina ciega Gusano de alambre	Volaton 2.5% (p) Basudin 14% (p) Birlane 2.5% (g) Paration etilico	40 kg. 20 kg. 40 kg. 4 lts.	12/1/79 25/1/80

Pulgon	Volaton 2.5% (g)	40 kgs.	6/11/81
	Basudin 14% (p)	20 kg.	22/1/82
	Birlane 2.5% (g)	40 kg.	
	Paration etilico	5 lts.	
	Volaton 2.5% (g)	40 kg.	2/4/82
	Birlane 2.5% (g)	40 kg.	
	Paration etilico	5 lt.	
	Volaton 2.5% (g)	40 kg.	11/2/83
	Basudin 14%	20 kg.	11/11/83
	Birlane 2.5% (g)	40 kg.	19/10/84
	Paration 1000	5 lt.	10/86
	Folidol 720 (CE)	1 lt.	12/1/79
	Folidol 3% (p)	20-25 kg.	25/1/80
	Folidol 720 (CE)	1 lt.	6/11/80
	Folidol 3% (p)	.75-1.0 lt.	22/1/82
	Folidol 720 (CE)	1.00 lt.	16/4/82
	Folidol 3% (p)	20-25 kg.	11/11/83
	Tamaron 600 (EC)	.75-1.0 lt.	24/1/84
	Folidol 720 (CE)	1 lt.	19/10/84
	Folidol 3% (p)	.75-1.0 lt.	
	Folidol 720 (CE)	1 lt.	1987
	Folidol 3% (p)	20-25 kg.	
	Tamaron 600 (CE)	.75-1.0 lt.	
	Pirimor	0.4-0.6 kg.	

Pathogen	Chemical Product	Dose/ha.	Cycle
Cenicilla	Morestan 25% (PH)	460-600 g.	12/1/79
	Milcurb 12.5% (CE)	0.800 lt.	25/1/80
	Benlate 50% (PH)	300-400 g.	6/11/81
	Morestan 25% (PH)	460-600 g.	7/2/81
	Milcurb 12.5% (PH)	0.800 lt.	
	Benlate 50% (PH)	300-400 g.	
	Milgo 35% CE	120 ml/litr	
	Afugan 30% CE	150 ml/100	
	Morestan 25% (PH)	450-600 g.	22/1/82
	Milcurb 12.5% (CE)	.6-.800 lt.	16/4/82
	Benlate 50% PH	3-400 g.	11/11/83

Mildiu	Manzanate 80 (PH)	1-2 kg.	12/1/79
	Daconil W75 (PH)	1.5-2.5 kg.	25/1/80
	Zineb 80	2-3 kg.	19/10/84
	Difolatan	1.5-2.5 kg.	
	Manzanate (PH)	1-2.0 kg.	6/11/81
	Daconil (PH)	1.5-2.0 kg.	22/1/82
	Difolatan 50% (PH)	2-2.5 kg.	16/4/82
	Cupravit 50%	1.8-2.4 kg.	18/2/83
	Trioxil 50%	1.5-2.0 kg.	11/11/83
Marchitez de la planta	don't plant in area		12/1/79
			25/1/80
			6/11/81
			22/1/82
			16/4/82
Jicamilla	don't plant melon two years		18/2/83
			12/1/79
			25/1/80
			22/1/82
			16/4/82

APPENDIX D
BUYER/SELLER CONTRACT, CANTALOUPE
VALLEY OF APATZINGAN, 1977/78 SEASON

(Purchase contract for cantaloupe melon for export. Contract established between the Local Agricultural Association, Producers of Fruits and Vegetables of Apatzingán, and the Regional Union, "José María Morelos," on the one part, and on the other, the company La Mantia Collum and Collier, Co., Inc., Weslaco, Texas)

Clauses:

1. The sellers (producers) are obligated to sell 50% of their total production during the 1977/78 season.
2. The buyers are obligated to receive this packed in wooden crates of jumbo type. The melons will be delivered to the buyers in the sizes of 27s, 36s, 45s, 56s, and 64s.
3. The sellers (producers) are responsible to deliver the stipulated fruit to the packing house, delivering to the trucks previously supplied by the buyer in 6 hours, stacking the crated fruit with 2 stuccos for base, with 20 kg. of ice per crate. The export documentation should be completed at the same place with the understanding that the fruit be in the best condition for export quality.
4. Both parties agree that the prices during the season will be those determined by the U.S. market in the negotiation between buyers and sellers.
5. The buyer will pay in U.S. dollars for the imported fruit and the maquila that have been delivered the week before.
6. The melon will be packed in the packing house that contracted the sellers (producers) or in one that they designated only when it meets the conditions required to operate and a packing house for export.
7. The price of the maquila will be at the regional level and the fruit will be sold LAB (free on board) in trucks provided by the buyer.
8. The buyers can deduct from future payments for fruit that has been rejected by the Food and Drug Administration. The F.D.A. can also reject the fruit from a packing house that has suffered continuous rain for more than 6 hours, 1/2 inch or more of precipitation, fruit with sunburn, or damaged fruit.

9. The buyers are in agreement to proportion to the sellers (producers) 21,793.13 U.S. dollars in anticipation, that will be delivered in dollars. This quantity is proportioned in the following form:

\$10,000.00	with this signing
\$ 5,000.00	in 8 days, at the definite determination of area
\$ 5,000.00	in 8 more days
\$ 1,739.00	in 8 more days

These quantities will be redeemed in proportional parts from March 1 through April 1, 1978. The documentation for this money will be paid through promissary notes undersigned by the society that manages the packing house and countersigned by the directors of the association.

Source: Durán Juárez and Bustin 1983:231-232.

APPENDIX E
NORMS IN CANTALOUPE PRODUCTION
AND COMMERCIALIZATION,
VALLEY OF APATZINGAN, 1987/88 SEASON

(This is an English translation of a public statement of norms established for cantaloupe producers and exporters in the valley of Apatzingán. This statement appeared in La Voz de Michoacán, a daily newspaper in the state capital, Morelia, Michoacán. The opinions and recommendations are the result of a series of studies conducted by government agencies, the cantaloupe producer organizations, and the regional union of cantaloupe producers during the spring of 1987. The participants organized a concerted effort to propose regulations which could correct the serious technical and commercial crisis in cantaloupe production and export in the Valley of Apatzingán. Agency representatives and directives of the producer organizations approved and signed the following norms prior to the 1987/88 season.)

To the Producers, Packers and Buyers
of Melon for Export in the State of Michoacán

In front of the proliferation of associative forms, trafficking in permits, and hectares planted without authorization, fitosanitary problems, and areas of great crop loss; irregularity in fruit classification, and high quotas for the maquila; deficient commercialization, and reduced institutional participation in credit and crop insurance, the majority of the cantaloupe producer groups met on August 14, 1987 in Morelia, Michoacán, with the presence of the peasant representatives of the state and the government authorities of the agricultural and forest sectors, they constituted an executive committee of coordination and vigilance of the program, organization, planting and commercialization of cantaloupe and cucumber in this state. With the authorization of the Governor, the following mandate is issued to apply the following norms.

Norms

1. Planting and export permits will be delivered only to organizations legally constituted that have certification of purging by the Ministry of Agriculture and Hydraulic Resources, the Ministry of Agrarian Reform and the Ministry of Work and Social Provision. Groups not legally constituted will not be granted hectarage to plant.

2. Planting of cantaloupe and cucumber will not be permitted outside the programs authorized by the Ministry of Agriculture's directive committee.

The groups whose producers exceed the authorized hectarage will have their export permits cancelled to the equivalent of two times the volume estimated by the hectarage exceeded. If the violation is repeated, the producer will lose his permit permanently, and the producer group reduce its hectarage correspondingly.

3. Planting-export permits authorized by the Ministry of Agriculture and Hydraulic Resources, through the corresponding Rural Development District, will be nominative, not transferrable, inalienable, and nonrentable.

A producer who rents, transfers, or sells his permit, will lose his planting-export permit in the immediate cycle. In the case of repeated violation, the producer will lose his permit definitively.

3.1. No producer can obtain planting authorization in 2 or more organizations, and he should notify the Ministry of Agriculture and Hydraulic Resources where he will establish his crop 15 days before planting. The parcel will be for 1-5 hectares under gravity irrigation and 1-6 hectares if pump irrigated, always and when it does not exceed the authorized hectarage of each organization, nor the hectarage programmed by the irrigation district.

No certificate of origin nor export permit will be issued to a producer who has not registered where he will produce cantaloupe.

3.2. The planting-export permits will be distributed by planting stages to the organizations, through the general authorized program according to the annual planting plant presented by the Committee Coordinator and approved by the committee directors of the rural development districts.

The hectarage that is not planted in the indicated stage will be cancelled to the producer and organization for this cycle.

4. The crops will be planted in compact areas no less than 10 hectares, or in the same zone for the same stage and will be attached specifically to the planting stages.

5. The crop residue of cantaloupe and cucumber, after the last cut for export, will be destroyed through a fitosanitary plowing in a period of no more than 72 hours.

This action will be the responsibility of the producer and in case he does not do the fitosanitary plowing, the producer organization will intervene, using the resources of the research indicated in the 14th norm. For infringing this norm, the producer will be eliminated definitely from the planting programs.

6. The organizations should contract the services of technical assistants to improve the productivity and quality of the crop with special emphasis in the solution of fitosanitary problems. The services should fall back on specialized personnel and approved by the Ministry of Agriculture and Hydraulic Resources and subject to the recommendations of the general programs authorized by the directive committees of the rural development districts.

To the organizations that do not contract specialized personnel to give technical assistance to their members, their planting-export permits will be reduced in the immediate cycle, in the hectareage equal to the area lost for lack of application of adequate technology, or better, the area in which is detected the presence of insect and disease infestations out of control.

7. The packing houses can only received cantaloupe and cucumber of the organizations of producers with whom they have previously contracted this service. These contracts should be registered before the Committee Coordinator and the corresponding rural development districts, for that no organization or packing house should finance producers of other organizations.

Only the Ministry will deliver certificates of origin and export permits, conforming to the forms that the organizations of producers have previously manifested.

8. The producers will only deliver the fruit to the packing house of their organization or that which their organization has contracted previous to planting.

9. The fruit will only be received by the packing houses in the manner that the producers carry the certificate of provenience and intended destination to their organization

and certified by the committee of coordination and vigilance.

To the producers, organization and packing house that infringe the 7th, 8th, and 9th norms, the export permits will be revoked during the same cycle for a product volume equal to double the amount of fruit moved irregularly. In case of reincidence, neither the producer or packing house will be authorized export permits during the immediate following cycle.

10. The classification of fruit will adhere to the norms established by the United States Department of Agriculture or the country where the shipment is destined.

To the producers who do not comply with this norm, their export permit will be revoked during the cycle, and they will not be delivered a planting permit during the next cycle.

10.1. Based on the planting program, the packing house will initiate operations at the end of the corresponding planting stage and will process only the programmed volume for the stage and with its organization of producers.

The packing house or organization that receives fruit outside the programmed planting stage will lose the export permits in the stage immediately following, for the quantity equivalent to 2 times the fruit received outside the programmed stage.

10.2 The receiving, classification, quality, and packing of fruit will be supervised by producers or technicians capable that represent the committee coordinator and that are authorized by the Ministry.

The organizations are compromised to not contract the delivery of production with packing houses that do not permit the supervision and periodic informing of the results of the process of selection and classification.

10.3 The authorization of new packing houses will be exceptional, only with justification and previously determined by the directive committee that the authorization will not cause illegal competition.

Packing houses that are established without authorization will not be authorized certificates or origin nor export permits.

10.4. In order to stimulate production and productivity of the campesinos, the packing houses will establish a fund equivalent to 50% of the actual price of the maguila, the same which will be distributed proportionately among the producers conforming to deliver their fruit, once the deductions of crop losses have been approved by the general assembly of the organization.

To the packing houses or organization that do not inform their general assembly, the committee coordinator and the directive committee or the prices of the maguila and the over prices of fruit packed of the producers, they will not be considered for export permits during the following production stage.

10.5. The organizations of producers or packing houses that commercialize fruit in direct export, will present to the assembly of producers, the results of the operations realized and will liquidate the over price conforming to the profits earned.

The organizations of producer or packing houses that do not comply with this norm, their export permit will be revoked during the cycle and planting permit during the cycle immediately following.

Only:

The cases not foreseen in the present convenio will be treated, attended, and resolved by the executive committee of coordination and vigilance, through the examination and study of the characteristics presented, in order that will prevail the order contemplated in the body of these norms.

Ministry of Agricultural and Forest Development
of the State of Michoacán

Source: La Voz de Michoacán, Morelia, Michoacán, August 1, 1987.

APPENDIX F
POLICY RECOMMENDATIONS,
WORKING GROUPS 1,2 AND 3,
APATZINGAN, MICHOACAN, JUNE 9, 1987

Propositions of the Working Group
on the Social Organization of Producers

This group proposes:

- a. to establish after this assembly, a reordering of cantaloupe and cucumber crops, a permanent discussion among the producers of fruit and horticultural crops of the region in order to elaborate an autonomous organizational policy and not continue working for the official sector.
- b. that, in 60 days, producer groups hold internal assemblies of organizations to determine exact number of members and to purge those who do not fill the specialty requirements that have been registered.
- c. to support the quality of members of producer organizations of fruit and horticultural crops, according to requirements established in 1979, that members be preferably private producer or with use rights of elemental productive resources of land and water.
- d. to carry out the process of regional reorganization for producers of fruit and horticultural crops.
- e. that producer groups initiate efforts to modify internal statutes to eradicate the original vices indicated.
- f. to put through legislative reform of laws that contain contradictory dispositions in the social organization of agricultural producers, as well as the law of cooperative societies.
- g. legislative modification of the General Law of Agricultural Associations.
- h. to propose modification of Federal Law of Waters and the Law of Rural Support and their amendments, such that in both the organizations of regional agricultural planning and programming, as well as the directive committees of the districts of rural development, that decisions can be made with equality, and always attending to the social interest of the agricultural sector.
- i. to establish legal mechanisms for the institutions of the official sector, such that they take into account the creation and registry of new organizational forms that have

the social objective of the same specialized productive activity already in the valley.

Propositions of the Working Group
on Productive Organization

We propose the order of crops in the countryside:

1. We recognize as productive zones of melon and cucumber, those comprised of the municipalities of Nuevo Urecho, Gabriel Zamora, Francisco J. Mújica, La Huacana, Tumbiscatio, Parácuaro, Apatzingán, Tepalcatepec, Aguililla, and Churumuco, Michoacán, and Jilotlán de los Dolores in the state of Jalisco.

2. In each productive zone, there will be planted only the hectareage of cantaloupe, cucumbers, and horticultural crops that the Ministry of Agricultura authorizes in coordination with the National Union of Horticultural Producers in agreement with the Regional Union and its affiliates.

3. A regional organization will be responsible to communicate the authorized hectareage in each case to the agricultural organizations, adhering to this, and these should diffuse the information to their members.

4. Agricultural organizations, when receiving the planting solicitudes of their members, should study and submit to consideration of the Regional Union in time that it can make the necessary solicitude before the Ministry of Agriculture for the respective authorization, in no more than 30 days after receiving the solicitudes at the organization's general assembly.

5. Of the hectareage for cantaloupe and cucumber authorized at the national level for the state of Michoacán, the distribution will conform to that determined by the General Assembly of affiliate organizations of the Regional Union.

6. Authorization of the solicitudes of planting presented for each organization will be subject to the following lines:

a. Present for stages opportunely the relation of member producers, specifying the area where they will plant, the type of irrigation system (gravity or pump), the authorized hectareage, and the type of land tenancy.

b. Groups that cannot plant all or part of the authorized hectareage must put these hectares at disposition of the

Regional Union to be distributed to other groups who need hectareage.

7. Planting authorizations are the exclusive benefit of each agricultural organization, not transferable to other persons, except in the case of legal heir of members. The organization has to solicit the documentatation needed to correct the misuse of planting permits.

8. Those organizations whose member producers do not plant in the corresponding stage, will not be authorized to plant new hectareage.

9. No producer can obtain planting authorization from 2 or more organizations simultaneously or in successive stages in the same cropping cycle.

10. Organizations will apply norms established. If the organization plants more hectareage, it will lose its right to this hectareage in corresponding cycles.

11. Plantings will be realized in compact areas.

12. The Ministry of Agriculture, the Ministry of Agrarian Reform, state authorities, financial sources, agricultural insurance agencies, and the organizations of registered producers will coordinate to realit the planting in compact areas.

13. Compact zones will be defined by lateral canals, wells, portreros, and predios to establish the planting programs.

14. All cantaloupe and cucumber will be planted in programmed stages.

15. All producers should be registered in the Ministry of Agriculture, and their organizations, through the census, should prove the producers are capable of planting crops.

16. Each producer should be assigned a quota of export volume in agreement with the authorized hectareage. Each organization will have rights to a global export quota, in agreement with the total authorized hectareage. This export quota will be calculated each cycle, multiplying the average yield of export melon by the authorized hectareage.

17. The projection for the upcoming cycle, 1987/88:

<u>stage</u>	<u>hectares</u>	<u>tons</u>
first	185	1091
second	461	2720
third	1383	8159
fourth	1752	10337

fifth	1845	10885
sixth	1476	8708
seventh	1034	6100
total	8136	48000

18. For purpose of programming hectarage of cantaloupe and cucumber hectarage in these stages, producers should petition the regional organization.

19. Solicitations must be presented to the Regional Union and corresponding irrigation district 10 days before the initiation of planting.

20. To guarantee control of the harvest, each organization must notify the Regional Union, the Ministry of Agriculture, and producers that meet established requirements, the assigned export quota and corresponding packing house 10 days before the stage begins.

21. When an organization exceeds the assigned export quota because of better applied technology, it should notify the Regional Union, soliciting amplification of permits.

22. The Ministry of Agriculture delivers planting permits to the producer 5 days before the initial stage of planting.

23. Given the crop losses in Parácuaro, Francisco J. Mújica (Nueva Italia), Gabriel Zamora (Lombardia), Nuevo Urecho and part of Apatzingán, producers of these municipalities can consign land in compact areas in other municipalities, when authorized by the agricultural organizations already established in these municipalities.

This is subject to the following:

- a. Organizations will solicit to the Regional Union.
- b. Organizations should name the predio where they will plant, as well as the hectarage, type of irrigation, and the receiving packing house.
- c. The authorized hectarage and producers outside the jurisdiction must prove that the producer soliciting the change will actually plant the crop.
- d. If the outside hectarage is negotiated, rented, or sold, the authorization is cancelled.
- e. Organization to whom these hectares are authorized should adjust the planting program that they are soliciting.
- f. Demand that organizations that solicit hectarage outside the jurisdiction, establish validation shares, applying modern technology to the cultivation of cantaloupe.
- g. The producer should consign credit from the local organization to improve the production technology.

24. The Regional Union, considering the above, will then formulate the solicitude to the Ministry of Agriculture and

the Ministry of Agrarian Reform, who will authorize the change in hectarage.

25. The authorized hectarage for these organizations will apply only for the agricultural cycle 1987/88.

24. Hectarage in perennial fruit trees may be used in the planting of cucumber and melon until these are not effecttion in associated cultivation. When this happens, the member will plant in another parcel that has irrigation.

Proposal of the Working Group
on Control of the Harvest and Commercialization

Procedure for control of the harvest and commercialization

a. that the packing houses should be property of the producers, and that those packing houses who operate without justifying their legal constitution or pack fruit without producing, their operation should be cancelled.

b. that packing houses should open when their corresponding harvest arrives and close immediately after the harvest.

c. that the fruit be delivered to the packing house in the name of the member producer of the organization.

d. that no organization should finance a member of another organization.

e. that for the creation of new packing houses, the Governor of the State and the Ministry of Agriculture realize with the participation of producers a socio-economic study to determine the viability of the packing house's function, in accord with Article 29 Section X of the Law of Agricultural Support.

f. that if the packing house is receiving fruit from other organizations, apply sanctions, obligating it to pay entirely the value of the fruit and the maquila, this through the Ministry of Agriculture. If the organization receives fruit again from another organization, its functions will be cancelled for the rest of the season.

Procedure for Control of Transport of Cantaloupe to the Packing House

a. that be established checkpoints to control illegal traffic in fruit.

b. that be established a mixed committee of mobile checking, staffed by representatives of the Governor of the State, the Ministry of Agriculture, and the producers.

c. create regulatory system to move fruit from parcel to packing house, with guides and harvest permits, for which each packing house should have an inspector to verify the correct reception of the product.

d. that all fruit that leave whatever part of the region to different markets, go supported with the invoice of both the local organization and the Regional Union.

Control of Quality Norms of Cantaloupe and Cucumber

a. to standardize the quality of the product, as well as the packing. For this, packing houses need to use crates of good quality to compete in the distribution market.

b. that the quality of cantaloupe and cucumber export correspond to the U.S. norms of inspection, established by the U.S.D.A.

c. that establish a committee of specialized inspectors to check the quality of product, crate, and form of packing, with the participation of the Ministry of Agriculture, producers, and buyers.

d. that producers, as well as buyers, adjust their norms.

Control of Commercialization and Transport

a. standardize in all region, the same form of contract, and that contracts be obligatory for producers of the export and national market.

b. establish refrigerated storage in the packing houses to preserve the product in good state to commercialize.

c. that create a distributor in a point most convenient to the U.S., to operate sales in a direct manner where producers participate in a determined percentage, for the purpose of liberating us from American tutelage.

d. that other distributing companies be invited who have not worked in the valley of the Tierra Caliente, to increase our opportunities. For this, should create a commission of promotion of our products in the U.S. with the participation of the State, the Ministry of Agriculture and the producers. Recommend hold a meeting of producers with the companies interested in operating in the region, before the initiation of the next season.

e. that establish contract terms for melon and cucumber no later than September 15. Only those companies that have arranged contracts by this date will be allowed to buy fruit for the season.

f. that the government of the state of Michoacán and the Ministry of Agriculture intervene before the government of the United States, such that they eliminate the ad valorem tax.

g. that transport should be in refrigerated cars so that the product is conserved in better conditions.

h. that is constituted a mixed commission, in which participates the Governor of the State, the Ministry of Agriculture, the Ministry of Communication and Transport, transporters, and producers to analyze tariffs applied to the transport of products (both to the export and national market) given that these tariffs are excessively high.

Source: BANRURAL 1987b:19-21; 1987c:1-7; and 1987d:2-5).

APPENDIX G
MEXICAN PESO EXCHANGE RATE
(1960-1988)

(These rates are used in converting costs, income, and value in cantaloupe production in Apatzingán reported in national currency.)

<u>Year</u>	<u>Pesos/U.S.\$</u>	<u>Year</u>	<u>Pesos/U.S.\$</u>
1960	12.50	1976	19.95
1961	12.50	1977	22.73
1962	12.50	1978	22.72
1963	12.50	1979	22.80
1964	12.50	1980	23.26
1965	12.50	1981	26.23
1966	12.50	1982	58.00*
1967	12.50	1983	150.70*
1968	12.50	1984	186.80*
1969	12.50	1985	318.20*
1970	12.50	1986	561.00*
1971	12.50	1987	1200.00
1972	12.50	1988	2300.00
1973	12.50		
1974	12.50		
1975	12.50		

*Averaged from monthly data.

Source: Nacional Financiera, S.N.C., 1986, La economía mexicana en cifras, Edición 1986. México, D.F.: Nacional Financiera, S.N.C.

APPENDIX H
STATISTICAL OUTPUT,
CANTALOUPE PRODUCTION AND COMMERCIALIZATION
VALLEY OF APATZINGAN,
1987/88 SEASON

Computer S.A.S. Program

```
data melon; infile 'a:uar1.dos';
  input prodorg $ supaut01 supsem01 supcos01 supsin01
  proprg01 prorel01 renpro01 espexp01 espnac01 espac01
  esptot01 renobt01;
  input #2 obtexp01 obtnac01 obtpac01 obttot01 valexp01
  valnac01 valtot01;
  input #3 supaut02 supsem02 supcos02 supsin02 proprg02
  prorel02 renpro02 espexp02 espnac02 espac02 esptot02
  renobt02 obtexp02 obtnac02
  obtpac02 obttot02 valexp02 valnac02 valtot02;
  input #4 supaut03 supsem03 supcos03 supsin03 proprg03
  prorel03 renpro03 espexp03 espnac03 espac03 esptot03
  renobt03 obtexp03 obtnac03
  obtpac03 obttot03 valexp03 valnac03 valtot03;
  input #5 supaut04 supsem04 supcos04 supsin04 proprg04
  prorel04 renpro04 espexp04 espnac04 espac04 esptot04
  renobt04;
  input #6 obtexp04 obtnac04 obtpac04 obttot04 valexp04
  valnac04 valtot04;
  input #7 supaut05 supsem05 supcos05 supsin05 proprg05
  prorel05 renpro05 espexp05 espnac05 espac05 esptot05
  renobt05;
  input #8 obtexp05 obtnac05 obtpac05 obttot05 valexp05
  valnac05 valtot05;
  input #9 supaut06 supsem06 supcos06 supsin06 proprg06
  prorel06 renpro06 espexp06 espnac06 espac06 esptot06
  renobt06;
  input #10 obtexp06 obtnac06 obtpac06 obttot06 valexp06
  valnac06 valtot06;
  input #11 supaut07 supsem07 supcos07 supsin07 proprg07
  prorel07 renpro07 espexp07 espnac07 espac07 esptot07
  renobt07 obtexp07
  obtnac07 obtpac07 obttot07 valexp07 valnac07 valtot07;
  input #12 supaut08 supsem08 supcos08 supsin08 proprg08
  prorel08 renpro08 espexp08 espnac08 espac08 esptot08
  renobt08;
  input #13 obtexp08 obtnac08 obtpac08 obttot08 valexp08
  valnac08 valtot08 tipoasoc;
data melon2; set melon; if tipoasoc<06;
  if tipoasoc=02 then tipoasoc=01; if tipoasoc=04 then
  tipoasoc=03; if tipoasoc=05 then tipoasoc=03;
  ovrrpd08=supsem08-supaut08; pirate08=obttot08-esptot08;
  ratio1=supcos08/prorel08; ratio2=valtot08/supcos08;
  ratio3=valtot08/prorel08; ratio4=obtexp08/obttot08;
```

```

proc npar1way data=melon2;
  class tipoasoc;
  var renobt08;
  var ratio1;
  var ratio2;
  var ratio3;
  var ratio4;
  var ovrprd08;
  var pirate08;
run;

```

Statistical Output

Definition of Variables Used in Statistical Analysis

RENOBT08 = Yield	=	<u>Total tons of fruit packed</u> Total number of hectares harvested
SUPCOS08 = Hectares	=	Total hectares harvested
OBTTOT08 = Produce	=	Tons of cantaloupe packed
RATIO2 = Ave. total income/ha.	=	<u>Total value of cantaloupe packed</u> Total no. of hectares of harvested
RATIO3 = Ave. total income/producer	=	<u>Total value of cantaloupe packed</u> Total no. of producers planted
RATIO4 = % export	=	<u>Total volume of fruit exported</u> Total volume of fruit packed
RATIO5 = % national	=	<u>Total volume of fruit national</u> Total volume of fruit packed
RATIO6 = % local	=	<u>Total volume of fruit local</u> Total volume of fruit packed
PIRATE08 = Pirating	=	No. of tons cantaloupe projected - no. of tons actually packed
OVRPRD08 = Over-Production	=	Total hectares harvested - total hectares programmed

 N P A R I W A Y P R O C E D U R E

 Wilcoxon Scores (Rank Sums) for Variable RENOBTO8
 Classified by Variable TIPOASOC

TIPOASOC	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
1	18	304.0	315.0	28.3424437	16.8888889
3	16	291.0	280.0	28.3424437	18.1875000

Average Scores were used for Ties

 Wilcoxon 2-Sample Test (Normal Approximation)
 (with Continuity Correction of .5)

 S= 291.000 Z= 0.370469 Prob > |Z| = 0.7110
 T-Test approx. Significance = 0.7134

 N P A R I W A Y P R O C E D U R E

 Wilcoxon Scores (Rank Sums) for Variable SUPCOS08
 Classified by Variable TIPOASOC

TIPOASOC	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
1	18	349.500000	315.0	28.9517393	19.4166667
3	16	245.500000	280.0	28.9517393	15.3437500

Average Scores were used for Ties

 Wilcoxon 2-Sample Test (Normal Approximation)
 (with Continuity Correction of .5)

 S= 245.500 Z= -1.17437 Prob > |Z| = 0.2402
 T-Test approx. Significance = 0.2487

 N P A R I W A Y P R O C E D U R E

 Wilcoxon Scores (Rank Sums) for Variable OBTOT08
 Classified by Variable TIPOASOC

TIPOASOC	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
1	18	309.500000	315.0	28.6150927	17.1944444
3	16	285.500000	280.0	28.6150927	17.8437500

Average Scores were used for Ties

 Wilcoxon 2-Sample Test (Normal Approximation)
 (with Continuity Correction of .5)

 S= 285.500 Z= 0.174733 Prob > |Z| = 0.8613
 T-Test approx. Significance = 0.8624

N P A R I W A Y P R O C E D U R E

Wilcoxon Scores (Rank Sums) for Variable RATIO2
Classified by Variable TIPOASOC

TIPOASOC	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
1	16	205.0	248.0	23.9051767	12.8125000
3	14	260.0	217.0	23.9051767	18.5714286

Average Scores were used for Ties

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 260.000 Z= 1.77786 Prob > |Z| = 0.0754
T-Test approx. Significance = 0.0859

N P A R I W A Y P R O C E D U R E

Wilcoxon Scores (Rank Sums) for Variable RATIO4
Classified by Variable TIPOASOC

TIPOASOC	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
1	13	131.0	162.500000	17.2602626	10.0769231
3	11	169.0	137.500000	17.2602626	15.3636364

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 169.000 Z= 1.79603 Prob > |Z| = 0.0725
T-Test approx. Significance = 0.0856

N P A R I W A Y P R O C E D U R E

Wilcoxon Scores (Rank Sums) for Variable RATIO6
Classified by Variable TIPOASOC

TIPOASOC	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
1	13	160.0	162.500000	17.0488429	12.3076923
3	11	140.0	137.500000	17.0488429	12.7272727

Average Scores were used for Ties

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 140.000 Z= 0.117310 Prob > |Z| = 0.9066
T-Test approx. Significance = 0.9076

 N P A R I W A Y P R O C E D U R E

Wilcoxon Scores (Rank Sums) for Variable PIRATE08
Classified by Variable TIPOASOC

TIPOASOC	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
1	18	264.0	315.0	28.9738957	14.6666667
3	16	331.0	280.0	28.9738957	20.6875000

Average Scores were used for Ties

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 331.000 Z= 1.74295 Prob > |Z| = 0.0813
T-Test approx. Significance = 0.0907

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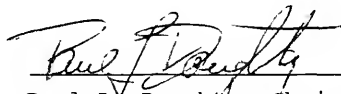
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BIOGRAPHICAL SKETCH

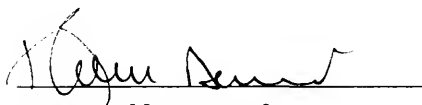
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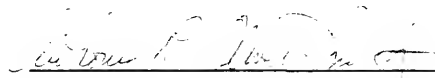
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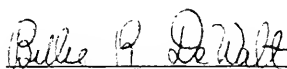
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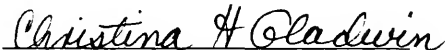
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